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in de huisartspraktijk

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Voorwoord

De publikatie die voor u ligt is het eindrapport van het onderzoek: 'Leefgewoonten en alledaagse gezondheidsproblemen. Een onderzoek met behulp van gezondheidsdagboeken'. Dit onderzoek maakt deel uit van het onderzoekprogramma 'Determinanten van gezondheid' van het Ministerie van WVC en werd voor een periode van 2 jaar en 2 maanden uit de fondsen van dit programma gefinancierd. Het onderzoekprogramma heeft een wetenschappelijk karakter en beoogt inzicht te geven in de verschillende determinanten van (on)gezondheid. Het onderhavige onderzoek past in deze wetenschappelijke traditie en de resultaten ervan worden dan ook aan het wetenschappelijk forum ter beoordeling voorgelegd. Dat gebeurt in de vorm van een zestal (engelstalige) wetenschappelijke artikelen die gebundeld als dissertatie zullen verschijnen. Het onderzoek is gebaseerd op gegevens verzameld in het kader van de Nationale Studie van Ziekten en Verrichtingen in de Huisartspraktijk.
De stand van zaken is momenteel (maart 1994) als volgt. Drie artikelen zijn door wetenschappelijke tijdschriften beoordeeld en met wijzigingsvoorstellen naar de onderzoeker teruggestuurd (artikel 1, 3 en 4 in de bijlage). Twee van deze artikelen zijn reeds opnieuw ter publikatie aangeboden. Het eerste artikel is inmiddels geaccepteerd. Van de drie resterende artikelen die nog niet zijn aangeboden, zijn er twee in conceptvorm intern beoordeeld door de onderzoekersvergadering op het NIVEL. Deze twee artikelen worden op het ogenblik bewerkt om binnenkort aan tijdschriften te kunnen worden toegezonden. De resultaten van deze vijf artikelen zijn in dit eindrapport samengevat.

Dit rapport is als volgt ingedeeld. In het volgende hoofdstuk worden de vraagstellingen van het onderzoek aan de orde gesteld, gevolgd door een korte beschrijving van de gegevens die voor het onderzoek gebruikt zijn. Hierna worden de resultaten voor beide vraagstellingen samengevat in de hoofdstukken drie tot en met zes. Het rapport wordt afgesloten met een discussie van de belangrijkste conclusies van het onderzoek en aanbevelingen voor zowel beleid als vervolgonderzoek. Als afzonderlijke bijlage worden de vijf artikelen die in concept gereed zijn, toegevoegd.

1. Inleiding en vraagstelling

In het dagelijks leven lijkt het optreden van een ziekte dikwijls een speling van het lot te zijn dat sommigen treft en anderen niet (Blaxter, 1990). Op het niveau van de gehele bevolking bestudeerd blijken ziekte, gebrek en handicap niet willekeurig verdeeld te zijn. Mensen met een zwakke maatschappelijke positie blijken korter te leven, vaker ziek te zijn en over het algemeen minder positief over hun gezondheid te oordelen dan individuen die maatschappelijk geslaagd zijn (Centraal Bureau voor de Statistiek 1991; Bensing, De Bakker en Van der Velden, 1991; Mackenbach, 1994). Ook is het zo dat individueel 'ongezond' gedrag samengaat met een verhoogde kans op ziekte en een kortere levensduur (Ruwaard en Kramers, 1993). Gedurende de laatste jaren is de belangstelling voor maatschappelijke en individuele determinanten van gezondheid toegenomen. De weerslag daarvan vinden we onder andere in de instelling van de onderzoekprogramma's 'Sociaal Economische Gezondheidsverschillen' en 'Determinanten van gezondheid'.

Het onderzoek waarvan de resultaten hier beschreven worden, sluit aan bij deze discussie over wat wel 'de ongelijke verdeling van gezondheid' genoemd wordt en speelt in op de verwevenheid van maatschappelijke en individuele factoren die deze ongelijke verdeling tot gevolg hebben.

Over welk aspect van de 'gezondheid' gaat dit onderzoek? Het is gebruikelijk om gezondheid te zien als meer dan de afwezigheid van ziekte. Niettemin is de vraag naar de aan- of afwezigheid van ziekte een belangrijk aandachtspunt voor de studie van de volksgezondheid. Ziekte wordt wel beschreven als een verschijnsel dat op drie niveaus bestaat: het individu, de dokter en de maatschappij (Köhler, 1992). Deze drie niveaus overlappen elkaar maar vallen niet samen. Mensen kunnen zich ziek voelen zonder dat de dokter daarvoor een aanwijsbare oorzaak vindt. Andersom kan de dokter een ziekte constateren die bij de patiënt tot dan toe zonder klachten is verlopen. De maatschappij tenslotte kan individuen of groepen als ziek of gezond bestempelen zonder dat de betrokkenen het met deze definitie eens zijn. Het onderhavige onderzoek beperkt zich tot de beschrijving van het optreden van ziekte op het individuele niveau en is gebaseerd op de zelfrapportage over het optreden van ziekteverschijnselen in een aselecte steekproef uit de bevolking. In de veelal engelstalige literatuur wordt dit individuele en aan leken gerelateerde ziektebegrip aangeduid met de term 'illness' en wordt het optreden van ziekte op het niveau van de dokter 'disease' genoemd (Eisenberg, 1977). In dit onderzoek gaat het dus over 'illness' ofwel de individuele beleving van gezondheidsklachten en niet over gediagnosticeerde morbiditeit ofwel 'disease'.

Het onderzoekprogramma 'Determinanten van gezondheid' hecht vooral waarde aan de studie van de gevolgen die bepaalde leefwijzen of riskante gewoonten voor de volksgezondheid kunnen hebben. Over de relatie tussen riskante gewoonten en het optreden van ziekte in de betekenis van 'disease' is al veel bekend en recentelijk voor de Nederlandse situatie gebundeld in de Volksgezondheid Toekomst Verkenning (Ruwaard en Kramers, 1993). Veel minder weten we van de relatie tussen bepaalde leefwijzen en 'illness'. Toch is het vooral de beleving van ziekteverschijnselen die mensen aanspoort tot handelingen om hun klachten te verlichten, zoals het toepassen van zelfmedicatie, rust houden of de huisarts raadplegen wanneer zij er zelf niet meer

uitkomen (zie artikel 5 van dit onderzoek). Gezondheidsklachten kunnen zowel een aanleiding zijn tot het opgeven van riskante gewoonten als een reden om dat juist niet te doen (Wetterer, Von Troschke, 1986). Wat dat laatste betreft, noemen rokers vaak 'stress' en psychische spanningen als argument om niet met roken te stoppen (United States Department of Health and Human Services, 1986). In dit onderzoek zijn we met name geïnteresseerd in de samenhang tussen riskante gewoonten, ziektebeleving en ziektegedrag. De vraag is dan of een 'ongezonde' leefwijze niet alleen tot het optreden van disease leidt maar ook samenhangt met een verhoogde kans op illness, en of een gezonde dan wel ongezonde leefwijze ook invloed heeft op het ziektegedrag.

De onderzoeksliteratuur over gezondheidsverschillen in de bevolking laat er geen twijfel over bestaan dat ziekte en gezondheid voor een deel samenhangen met de positie die individuen in de samenleving innemen (Mackenbach, 1994). Vaak wordt gewezen op de sociaal economische status, die gemeten wordt met het opleidingsniveau of de aard van het beroep dat men uitoefent. Daarnaast spelen ook de samenstelling van het huishouden, het hebben van werk en de integratie in de samenleving een rol in de aanwezigheid van gezondheidsverschillen (De Bakker, Claessens, Van der Velden, 1992). Het is eveneens bekend, dat niet alleen de gezondheidstoestand zelf maar ook een gezonde of ongezonde leefwijze samenhangt met de plaats die men in de samenleving inneemt (Bruin, 1992; Loon, 1992; Stronks, Van de Mheen, Mackenbach, 1993). In dit onderzoek naar de relatie tussen leefwijzen en de ziektebeleving is daarom getracht om ook de sociale positie van mensen in de analyses te betrekken[1].

Het is gebruikelijk om in het onderzoek naar het optreden van ziekte een onderscheid te maken tussen acute en chronische gezondheidsproblemen en hoewel beide in dit onderzoek aan bod komen, ligt hier de nadruk op kortdurende alledaagse acute klachten en de acties die men onderneemt om deze klachten te verlichten. Het accent op acute klachten is enerzijds ingegeven door het beschikbare datamateriaal, dat zich met name leent voor de bestudering van dit aspect van ziekte maar anderzijds is het zo, dat chronische aandoeningen in Nederland al veelvuldig onderwerp van studie zijn, terwijl dat met acute klachten veel minder het geval is (Van den Bos e.a., 1991).

Deze overwegingen hebben geleid tot twee vraagstellingen:

1. Welke alledaagse gezondheidsklachten komen er in de bevolking voor in samenhang met riskante gewoonten, gezondheidsattent gedrag en de sociale posities die individuen innemen?

2. Welke samenhangen bestaan er tussen sociale posities, riskante gewoonten en gezondheidsattent gedrag en het proces van klachtinterpretatie en ziektegedrag bij alledaagse gezondheidsklachten?

De eerste vraagstelling wordt beantwoord in hoofdstuk 3, waarin de artikelen 1 en 2 worden samengevat. Hierna volgt in hoofdstuk 4 een methodologische beschouwing over het meten van alledaagse gezondheidsklachten. Dit hoofdstuk is een samenvatting van artikel 3. De tweede vraagstelling komt aan de orde in de hoofdstukken 5 en 6. Deze hoofdstukken bieden een

samenvatting van respectievelijk het vierde en het vijfde artikel. In hoofdstuk 7 volgen conclusies en aanbevelingen.

Met de beantwoording van deze vragen hoopt het onderzoek inzicht te bieden in de wijze waarop de individuele beleving en het gedrag bij ziekte gerelateerd zijn aan gezonde en ongezonde leefwijzen, waarbij rekening wordt gehouden met de sociale positie van individuen. Het onderzoek biedt daarmee een aanvulling op de bestaande epidemiologische kennis over de samenhang tussen leefwijzen, ziekte en sterfte. Daarnaast kan het onderzoek van belang zijn in de discussie over het bevorderen van een gezonde leefstijl.

2. Gegevens uit de Nationale Studie

Dit onderzoek is gebaseerd op een secundaire analyse van gegevens die verzameld zijn in het kader van de 'Nationale Studie naar Ziekten en Verrichtingen in de Huisartspraktijk' die door het NIVEL tussen 1987 en 1990 werd uitgevoerd. Een gedetailleerde beschrijving van de opzet is te vinden in Foets en Van der Velden, 1990.

Aan dit onderzoek werd deelgenomen door 161 huisartsen in 103 praktijken verspreid over heel Nederland. De huisartsen zijn geworven op basis van een aselecte, niet-proportioneel gestratificeerde steekproef uit het bestand van alle gevestigde huisartsen (stand van 1985). Deze huisartsen registreerden gedurende drie maanden alle contacten die zij met patiënten hadden.

Daarnaast werden patiënten benaderd met een enquête die vergelijkbaar is met de gezondheidsenquête van het CBS. Bij elke huisarts werd daartoe uit de kaartenbak een aselecte steekproef van 100 personen getrokken (netto steekproef= 17047 personen). De vraaggesprekken leverden uiteindelijk voor 13014 personen verwerkbare gegevens op (respons = 77%). De enquête bevat onder meer vragen over de gezondheid (het eigen oordeel over de gezondheidstoestand en invulformulieren over acute en chronische klachten en over de geestelijke gezondheid) riskante gewoonten (roken, alcoholconsumptie, sportbeoefening, en vragen over lengte en gewicht om overgewicht vast te stellen). De sociaal economische status werd gemeten met vragen over het opleidingsniveau en het beroep. Ook bevatte de enquête vragen over de omvang en samenstelling van het huishouden en de dagelijkse activiteiten van de respondent (betaald werk, het huishouden doen, dagopleiding volgen etcetera). Een gedetailleerde beschrijving van de vragen en de gebruikte instrumenten is te vinden in de volgende hoofdstukken en in de concept artikelen die als bijlage zijn toegevoegd (zie ook: Foets, 1992).

Aan de respondenten van de enquête werd ook gevraagd om gedurende drie weken een zogenaamd gezondheidsdagboek bij te houden. Dagelijks dienden hierin door de respondent de optredende gezondheidsklachten, de interpretatie daarvan en de naar aanleiding van de klacht ondernomen activiteiten te worden geregistreerd. Hiervoor was in het dagboek voor elke dag een gestructureerd vragenlijstje opgenomen (zie het voorbeeld hiervan in bijlage 1). Bijna 85% van de respondenten van de enquête voldeed aan dit verzoek en maakte dagelijks notities (N = 11038). De enquête onder patiënten en de gezondheidsdagboeken vormen de belangrijkste bron van gegevens voor dit onderzoek. In dit onderzoek zijn de dagboeken van kinderen tot 15 jaar buiten beschouwing gelaten. Over de gezondheid en het ziektegedrag bij kinderen zal afzonderlijk gepubliceerd worden in samenwerking met de vakgroep Huisartsgeneeskunde van de Erasmus Universiteit Rotterdam.

3. Gezondheid, sociale positie en riskante gewoonten

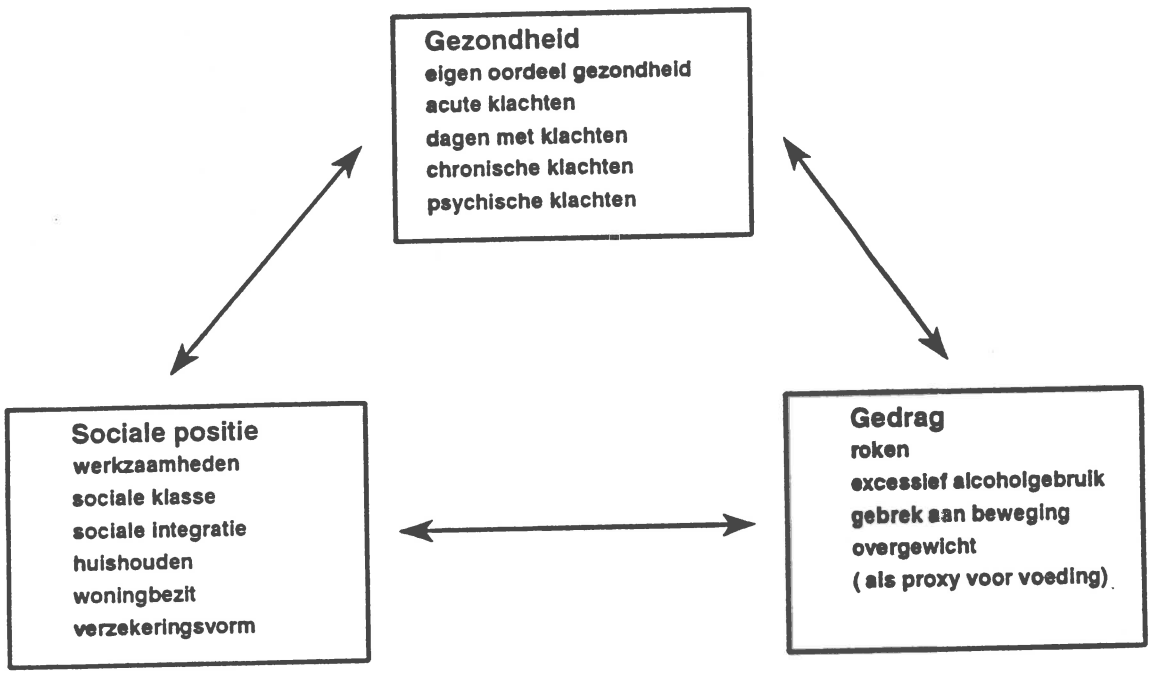
De relatie tussen gezondheid, riskante gewoonten en sociale positie is in de afgelopen decennia vooral onderzocht vanuit de gedachte dat riskante gewoonten een deel van de verklaring vormen voor de gezondheidsverschillen tussen de sociale klassen (Stronks, Van de Mheen, Mackenbach, 1993). De slechtere gezondheid van mensen in de lagere klassen zou dan vooral toe te schrijven zijn aan hun ongezonde leefwijze. In Nederland en daarbuiten is de samenhang tussen sociale positie en riskante gewoonten inderdaad aangetoond. Toch vormt gezondheidsbevorderend of schadend gedrag zeker niet de gehele verklaring voor het bestaan van sociaal-economische gezondheidsverschillen. De precieze relatie tussen indicatoren van gezondheid aan de ene kant en kenmerken van sociale positie en leefstijl aan de andere kant, blijkt in de praktijk moeilijk te ontrafelen, zeker wanneer alleen cross-sectionele data ter beschikking staan (Programmacommissie SEGV, 1994). In de discussie over deze relatie heeft een recent Brits onderzoek een provocerende stelling geponeerd (Blaxter, 1990). Er wordt verondersteld dat een gezonde leefwijze vooral gezondheidswinst oplevert voor mensen die toch al in goede materiële en immateriële omstandigheden verkeren, terwijl voor groepen in de samenleving die geplaagd worden door bijvoorbeeld werkloosheid, ongezond arbeidsomstandigheden en slechte behuizing, een gezonde leefstijl er nauwelijks toe doet. Deze stelling wordt in dit onderzoek slechts ten dele onderbouwd. In het eerste artikel van dit onderzoek is een poging gedaan om deze veronderstelling te toetsen waarbij niet alleen gebruik werd gemaakt van de genoemde gegevens uit Nederland maar ook soortgelijke gegevens uit een gezondheidsenquête en gezondheidsdagboeken uit Denemarken zijn opgenomen. Paragraaf 3.1. biedt een samenvatting van dit artikel, waarbij vooral over de Nederlandse situatie gerapporteerd wordt. Voor een beschrijving van de Britse en de Deense situatie verwijzen we naar het eerste artikel zoals dat te vinden is in de afzonderlijke bijlage. In paragraaf 3.2 worden vervolgens de acute klachten die met roken samenhangen beschreven.

3.1. Samenhangen tussen sociale positie, leefstijl en 5 indicatoren van gezondheid

Naar verwachting zal de relatie tussen sociale positie, riskante gewoonten en gezondheid het duidelijkst naar voor komen voor volwassenen in de leeftijd van ongeveer 25 tot 65 jaar. Voor jongeren en ouderen zijn de sociaal-economische gezondheidsverschillen kleiner en mag ook een geringere samenhang met riskante gewoonten verwacht worden. Respondenten die jonger zijn dan 25 jaar of ouder dan 64 jaar zijn daarom buiten beschouwing gelaten[2]. Het Britse onderzoek heeft bij de analyse van de samenhang tussen sociale positie, riskante gewoonten en gezondheid alleen die personen betrokken die niet lijden aan een chronische ziekte die het individu beperkingen oplegt. Het argument hiervoor is dat deze beperkingen effect zouden kunnen hebben op de leefstijl (bijvoorbeeld minder aan lichaamsbeweging doen) zodat de leefstijl meer een gevolg van ongezondheid is dan andersom. In de Nederlandse gegevens is een vergelijkbare selectie gemaakt. Er is voor gekozen om personen met een AAW en WAO uitkering buiten beschouwing te laten. Bij een eerdere analyse van dezelfde gegevens bleek dat met name deze respondenten hun gezondheid negatief beoordelen en veel last hebben van chronische aandoenin-

gen en/of handicaps (Bensing, De Bakker en Van der Velden, 1991). Het volgende schema brengt de onderzochte relatie tussen sociale positie, riskante gewoonten en gezondheid in beeld.

Schema: De relatie tussen sociale positie, riskante gewoonten en gezondheid



In het onderzoek naar de samenhang tussen deze drie kenmerken is eerst met kruistabel- en variantieanalyse gekeken naar de onderlinge bivariate relaties. Hierbij zijn twee leeftijdsgroepen onderscheiden (25-44 jaar en 45-64 jaar) en zijn er voor mannen en vrouwen afzonderlijke analyses uitgevoerd.

De analyse van de samenhang tussen sociale positie en gezondheid laat zien dat personen die tot de klasse van geschoolde en ongeschoolde handarbeiders behoren, hun gezondheid als ongunstiger beoordelen en meer chronische aandoeningen rapporteren dan hoofdarbeiders en zelfstandigen. In de leeftijdscategorie van 45-64 jaar was ook hun psychische gezondheid slechter (gemeten met de GHQ van Goldberg, 1972). Bij de categorie van 20 tot 45 jarigen viel vooral op dat vrouwen uit de categorie 'hoofdarbeid' veel psychische klachten rapporteerden. Voor elk van de bovenstaande indicatoren van gezondheid geldt dat personen die in een eigen huis wonen of particulier verzekerd zijn een gunstiger oordeel over de eigen gezondheid hebben dan respectievelijk bewoners van huurwoningen of ziekenfondsverzekerden. Ook werkloosheid gaat samen met een minder goede ervaren gezondheid, wat sterker geldt voor mannen dan voor vrouwen. Alleenstaanden beoordelen hun gezondheid over het algemeen als ongunstiger dan zij die samenwonen met een partner en/of kinderen, waarbij opgemerkt moet worden dat de slechtste

gezondheid veelal wordt gerapporteerd door respondenten die deel uitmaken van eenoudergezinnen[3]. Een geringere sociale integratie ging ook meestal samen met een ongunstiger oordeel over de eigen gezondheid, waarbij opviel dat het hebben van 'echte' vrienden, wat een van de indicatoren van sociale integratie is, met name van belang was voor het gezondheidsoordeel van vrouwen in de leeftijd van 45 tot 65 jaar. Daar tegenover staat dat de zelf gerapporteerde gezondheid van mannen in deze leeftijdscategorie minder met sociale integratie te maken lijkt te hebben.

De positie die men in de samenleving inneemt, is niet alleen gerelateerd aan de gerapporteerde gezondheidstoestand maar hangt ook samen met een gezonde of ongezonde leefwijze. Tussen beide bivariate relaties bestaan opvallende parallellen. Handarbeiders roken vaker, wegen vaker teveel en sporten minder dan zogenaamde hoofdarbeiders en dat geldt ook voor de bewoners van huurwoningen en ziekenfondsverzekerden[4]. Werklozen roken meer dan werkenden, wat met name geldt voor mannen tussen 45 en 65 jaar. Ook valt op dat veel gerookt wordt door vrouwen van 25 tot 45 die deel uitmaken van een éénouder gezin. De rapportage over het gebruik van alcohol wijkt af van de rapportage over de andere riskante gewoonten. Er is eigenlijk nauwelijks sprake van een consistent patroon of het zou moeten zijn dat excessief drankgebruik meer gerapporteerd wordt door respondenten met een hogere sociaal-economische status zoals hoofdarbeiders en particulier verzekerden.

Het opmerkelijke verschil in de samenhangen tussen sociale positie en roken, overgewicht en sport aan de ene kant en sociale positie en alcoholgebruik aan de andere kant, vinden we ook terug wanneer naar de relatie tussen riskante gewoonten en gezondheid gekeken wordt. Rokers rapporteren meer acute en psychische klachten dan niet-rokers, waarbij de verschillen onder de vrouwelijke respondenten het grootst zijn. Mensen die een bepaalde sport beoefenen, oordelen positiever over hun eigen gezondheid en hebben minder acute en chronische klachten. Overgewicht is natuurlijk geen riskante gewoonte in de strikte zin van het woord maar kan gebruikt worden als indicator voor ongezonde voedingsgewoonten (De Bruin, 1992). Personen met overgewicht beoordelen hun gezondheid als minder goed en rapporteren vooral meer chronische aandoeningen dan personen zonder overgewicht. Voor vrouwen geldt meer nog dan voor mannen, dat overgewicht samenhangt met een ongunstig oordeel over de eigen gezondheid. De rapportage over de alcoholconsumptie bleek niet op een consistente wijze samen te hangen met de verschillende indicatoren van gezondheid. De mate waarin de gevonden verschillen statistisch significant zijn, is te lezen in bijlage A1.3. van het eerste engelstalige artikel.

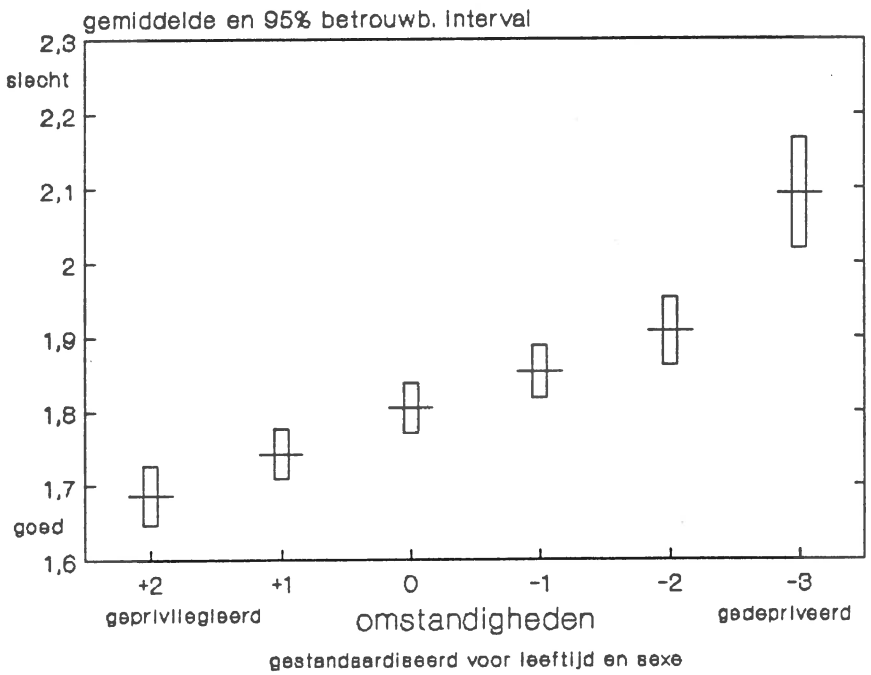
De onderzoeken uit Denemarken en het Verenigd Koninkrijk laten vergelijkbare samenhangen tussen sociale positie, riskante gewoonten en gezondheid zien. Voor een overzicht van de resultaten verwijzen we naar artikel 1. Hierin wordt ook ander Nederlands en buitenlands onderzoek aangehaald, dat de gevonden samenhangen in grote lijnen bevestigt.

Als vervolg op deze bivariate samenhangen is nagegaan hoe enerzijds gezondheid en anderzijds gezonde en ongezonde leefwijzen samenhangen met een cumulatie van gunstige dan wel ongunstige kenmerken van sociale positie. Als gunstige kenmerken gelden bijvoorbeeld een eigen huis hebben of particulier verzekerd zijn tegen ziektekosten. Als ongunstige kenmerken zijn opgenomen: alleenstaand zijn (met uitzondering van studenten), deel uitmaken van een

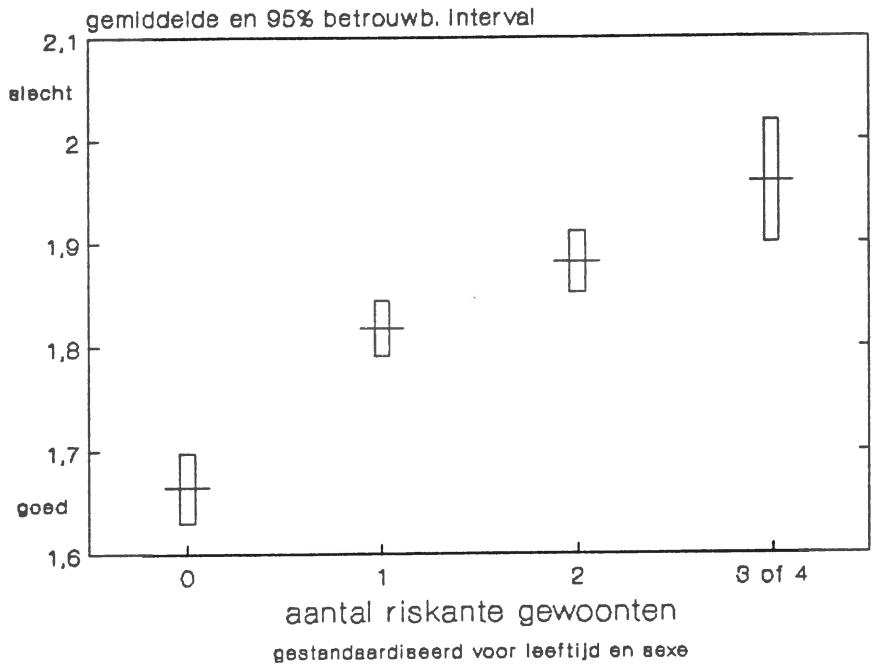
éénoudergezin, in een van de drie grote steden wonen, werkloos zijn of als alleenstaande of in een éénoudergezin het huishouden doen[5]. Ook het hebben van weinig vrienden, weinig bezoek ontvangen of niet deelnemen aan het verenigingsleven wordt als ongunstig gezien. Een cumulatie van gunstige kenmerken wordt 'privilege' genoemd en een cumulatie van ongunstige kenmerken 'deprivatie'. De genoemde kenmerken zullen natuurlijk verschillen in de mate waarin zij bijdragen aan de toestand van privilege of deprivatie. Verder is het ook niet zo dat één ongunstig kenmerk iemand al tot een gedepriveerde bestempeld. In het onderzoek gaat het juist om de cumulatie, die zichtbaar wordt aan de uiteinden van de schaal die loopt van +2, waartoe bijna 14% van de respondenten van 25-64 jaar behoort, tot -3 (of lager) waartoe 6.5 % gerekend wordt[6]. Aan de bovenkant van de schaal vinden we vooral samenwonende paren of tweeoudergezinnen met een eigen huis, gesitueerd buiten de grote stad en een inkomen afkomstig uit arbeid. Aan de onderkant vinden we daarentegen vooral alleenstaanden en éénoudergezinnen in huurwoningen in de grote steden, waar het inkomen niet uit arbeid afkomstig is.

Het oordeel over de eigen gezondheid is een simpele en veel gebruikte indicator van de gezondheidstoestand die vooral een thermometer-functie heeft. In dit onderzoek loopt deze schaal van 1 (zeer goede gezondheid) tot 5 (zeer slechte gezondheid) met een gemiddelde van 1.82. De figuren 3.1 en 3.2 laten zien dat zowel een cumulatie van ongunstige omstandigheden als een cumulatie van ongezonde leefwijzen op consistente wijze samenhangen met een steeds ongunstiger oordeel over de eigen gezondheid[7].

Figuur 3.1. Subjectieve gezondheid in samenhang met de cumulatie van sociale en materiële omstandigheden

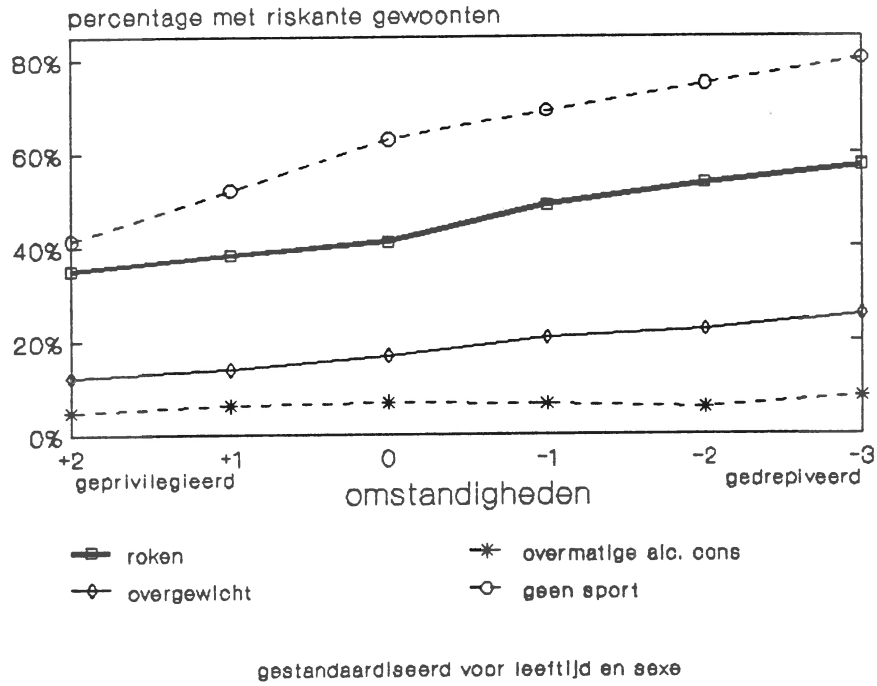


Figuur 3.2. Subjectieve gezondheid in samenhang met het aantal riskante gewoonten



Figuur 3.3 laat zien dat een cumulatie van ongunstige omstandigheden ook samengaat met een ongezondere leefstijl, wederom met uitzondering van overmatig drankgebruik.

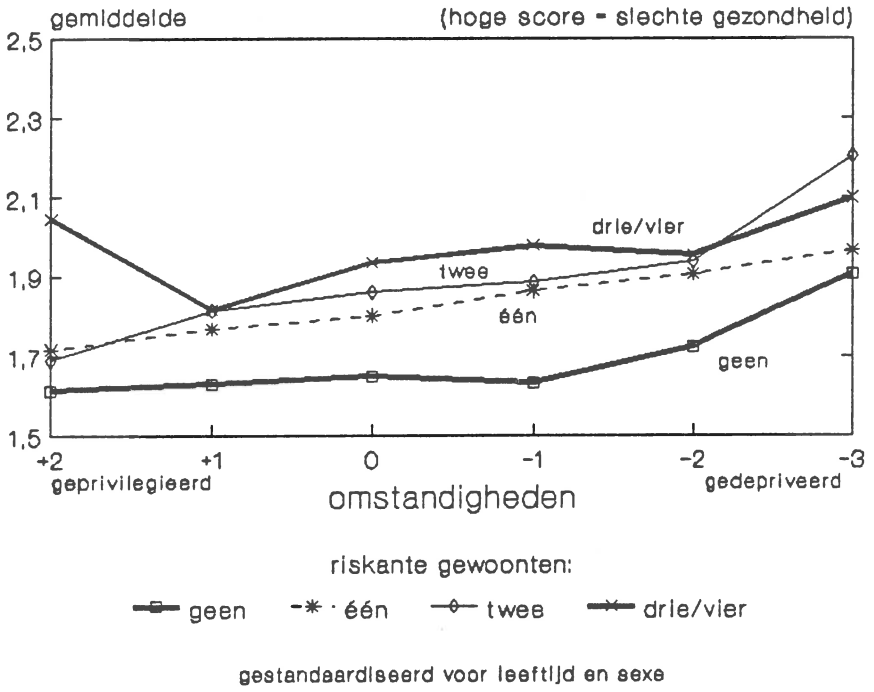
Figuur 3.3. Riskante gewoonten in samenhang met de cumulatie van sociale en materiële omstandigheden



Is het nu zo dat de cumulatie van ongunstige omstandigheden de samenhang tussen riskante leefgewoonten en gezondheid teniet doet, zoals verondersteld werd in het Britse onderzoek?

Noch in de Nederlandse noch in de Deense data hebben we steun kunnen vinden voor deze veronderstelling, hoewel een krachtige statistische toetsing voor alle indicatoren van gezondheid heeft plaatsgevonden. Voor de beschrijving van deze statistische toetsing verwijzen we naar het concept artikel. In dit rapport volstaan we met een grafiek waar opnieuw het eigen oordeel over de gezondheid in beeld wordt gebracht, dit maal voor zowel de cumulatie van omstandigheden als het aantal ongezonde leefwijzen. Figuur 3.4 laat zien dat een gezonde leefstijl steeds in een relatief gunstig oordeel over de eigen gezondheid resulteert en dat dit oordeel pas bij een cumulatie van ongunstige omstandigheden duidelijk slechter wordt. Daarbij is het zo dat ook onder de meest gedepriveerden er een samenhang bestaat tussen leefwijze en gezondheidsoordeel.

Figuur 3.4. Riskante gewoonten in samenhang met de cumulatie van sociale en materiële omstandigheden



In het artikel dat over dit onderwerp geschreven is, wordt stil gestaan bij enkele verklaringen voor het ontbreken van het veronderstelde effect van de combinatie van omstandigheden en leefgewoonten. Er wordt op gewezen dat de Britse data eigenlijk onvoldoende getoetst zijn om deze belangrijke conclusie uit het boek 'Health and Lifestyle' te ondersteunen. Wanneer, bij nadere toetsing mocht blijken dat het genoemde effect wel in Groot-Brittannië bestaat maar niet in Nederland en Denemarken dat zouden de verschillen in welvaart tussen deze landen en het Verenigd Koninkrijk daar een verklaring voor kunnen vormen. In Nederland en Denemarken is minder inkomensongelijkheid en minder armoede dan in Groot-Brittannië. Ook wordt er een

groter percentage van het BNP uitgegeven aan het beschermen van de 'zwakkeren in de samenleving' (Eurostat, 1991). Tevens is er in Denemarken en Nederland in de afgelopen decennia veel minder neerwaartse sociale mobiliteit tussen de generaties geweest dan in Groot-Brittannië (Ultee & Luijks, 1986). Uit deze redenering volgt ook dat in landen waar geen of een slechter functionerende verzorgingsstaat bestaat dan in landen als Denemarken of Nederland, de volksgezondheid vooral bevorderd kan worden door het verkleinen van de sociaal economische verschillen, ofwel een betere bescherming van de zwakken in de samenleving. In landen waar zo'n verzorgingsstaat wel bestaat zou de volksgezondheid wellicht het beste bevorderd kunnen worden met een verandering van leefstijl. Dat geldt met name voor een land als Denemarken waar enerzijds de sociaal economische verschillen klein zijn maar anderzijds bijvoorbeeld, veel meer gerookt wordt dan in Nederland. In de laatste decennia heeft Denemarken de prijs voor deze ongezonde leefstijl moeten betalen met een sterk toegenomen sterfte van vrouwen aan met name longkanker (Kamper-Jørgensen, 1993).

3.2. Riskante gewoonten, sociale positie en klachten: roken als voorbeeld

De voorgaande paragraaf liet zien dat een goede gezondheid een kwestie is van zowel een gezonde leefstijl als van een min of meer bevoorrechte sociale positie. Gezondheid werd gemeten met vijf globale indicatoren die gebaseerd zijn op rapportage van de respondent zelf. In dit onderzoek staat de beleving en het ziektegedrag bij acute klachten centraal en daarom wordt aan het voorkomen van deze klachten extra aandacht besteed.

De vraagstelling in deze paragraaf, is er met name op gericht om na te gaan welke acute klachten met een bepaalde ongezonde leefgewoonte samenhangen. Dàt ongezonde leefgewoonten tot meer klachten leiden, bleek in de voorgaande paragraaf. In het concept-artikel dat aan deze vraagstelling gewijd is, is er voor gekozen om deze samenhang alleen voor rookgewoonten (inclusief ex-rokers) weer te geven. Van de vier hierboven besproken indicatoren van gezonde en ongezonde leefgewoonten is roken zowel de belangrijkste met het oog op de volksgezondheid (zie ook Ruwaard & Kramers, 1993) als ook de indicator die zich het beste leent voor meting met een enquête[8].

In de Nationale Studie van Ziekten en Verrichtingen in de Huisartspraktijk is op twee manieren informatie verzameld over het voorkomen van acute klachten bij een steekproef van patiënten. Tijdens het vraaggesprek is een lijst met 42 veel voorkomende klachten voorgelegd met de vraag of men hier last van heeft gehad in de voorgaande 14 dagen. De respondent kon hieraan nog 3 niet genoemde klachten toevoegen. Deze klachten werden voor dit artikel gegroepeerd in 11 categorieën, die in bijlage 3 nader beschreven zijn.

Daarnaast is er aan de respondent gevraagd om gedurende drie weken een zogenaamd gezondheidsdagboek bij te houden. Dit dagboek bestond uit een schrift met voor elke dag een nieuwe bladzijde met een gestructureerd vragenlijstje. De respondent werd gevraagd om elke dag aan te geven of er gezondheidsklachten zijn opgetreden en zo ja om de aard van de twee belangrijkste klachten in eigen woorden weer te geven. Daarna diende ingevuld te worden hoe de klacht werd

beleefd (bijvoorbeeld ernstig of niet) en wat men aan de klacht gedaan heeft (variërend van niets, tot ziek in bed blijven of de huisarts raadplegen). De door de respondent zelf beschreven klachten werden in 97 categorieën gecodeerd, die gebaseerd zijn op de hoofdstukken uit de ICPC (Lamberts & Wood, 1987). Voor dit artikel zijn deze categorieën tot 18 groepen samengevoegd die ontleend zijn aan de indeling die gebruikt werd in het Regioproject Nijmegen (Furer & Tax, 1987 zie ook bijlage 2).

Er bestaat natuurlijk een groot verschil tussen het éénmalig aankruisen van items in een vragenlijst en het regelmatig bijhouden van het dagboek. Het bijhouden van het dagboek vereist een veel hogere motivatie van de respondent, ook al omdat van elke klacht aangegeven moet worden hoe men deze beoordeelde en wat men er aan gedaan heeft[9].

Voor beide meetinstrumenten geldt dat zij uitsluitsel kunnen geven of de respondent last heeft gehad van een bepaalde klacht of klachtengroep in een periode van 14 dagen (enquête) of 21 dagen (dagboek).

In de vorige paragraaf is duidelijk gebleken dat gezondheidsklachten niet alleen met leefgewoonten maar ook met de sociale positie samenhangen, waarbij het voorkomen van ongezonde leefgewoonten zelf ook weer aan de sociale positie gerelateerd is. Om de relatie tussen rookgewoonten en klachten weer te geven kan dan ook niet volstaan worden met de bivariate samenhang alleen. Er is zowel voor mannen als vrouwen een beschrijvend overzicht gemaakt van de relatie tussen roken en acute klachten, waarbij gecontroleerd is voor leeftijd (25-64 jaar). De beschrijvende analyse is vervolgens herhaald met een statistische controle voor sociale positie met de variabelen 'sociale klasse, opleidingsniveau, dagelijkse activiteiten (werk/opleiding volgen/huishouden doen, nu ook inclusief wao-ers) en samenstelling van het huishouden. In de statistische controle werd ook rekening gehouden met de andere reeds genoemde leefgewoonten (drankgebruik, overgewicht, deelname aan sport) en met de mate van kerkelijke betrokkenheid die een belangrijke determinant voor een gezonde dan wel ongezonde leefstijl blijkt te zijn (Tijhuis, 1994). Op deze wijze werd getracht om meer in het algemeen voor de mate waarin men een gezonde leefstijl heeft te controleren[10]. Tot slot leek het van belang om ook de motivatie van de respondent in de controle te betrekken omdat verwacht mag worden dat goed gemotiveerde respondenten eerder hun klachten in het dagboek zullen noteren dan respondenten die dat niet zijn. Omdat er niet rechtstreeks naar de motivatie gevraagd is, is gekozen voor een variabele die de mate van interesse in gezondheid en de gezondheidszorg weergeeft.

Voor het beschrijvend overzicht van het optreden van gezondheidsklachten in het algemeen werd zowel van de enquête als van de dagboeken gebruik gemaakt. De tabellen zijn hier niet opnieuw afgedrukt maar zijn te vinden als tabel 1 en 2 in het tweede concept-artikel.

De gegevens uit de enquête laten zien dat psychische klachten als vermoeidheid, nervositeit en slapeloosheid veel voorkomen. Ook verkoudheid en griep, hoofdpijn en gewrichtsklachten (met name bij ouderen) behoren tot de alledaagse beleving van ziekte. De gegevens uit de dagboeken laten ongeveer hetzelfde patroon zien, al zijn de percentages over het geheel genomen lager. Om een idee te krijgen van de consistentie in het antwoordpatroon werden deze resultaten vergeleken met andere onderzoeken waarbij ofwel een vergelijkbare klachtenlijst (CBS proefonderzoek

gezondheidsmeting) ofwel een open vraag (Regio-project Nijmegen) gebruikt is. Uit deze vergelijking bleek dat de resultaten die met de klachtenlijsten verkregen zijn erg op elkaar lijken, terwijl de onderzoeken met de open vraagstelling nogal van elkaar verschillen (zie de tabellen A2.1 en A2.2 in de bijlage bij het tweede artikel).

Voor de analyse van de samenhang tussen rookgewoonten en gezondheidsklachten is onderscheid gemaakt tussen niet rokers die nooit gerookt hebben, ex-rokers en huidige rokers. Er zijn aparte analyses voor mannen en vrouwen uitgevoerd terwijl leeftijd (25-64 jaar) weer als controle-variabele gebruikt is. In de tabellen 3.1. en 3.2 wordt deze samenhang beknopt weergegeven met behulp van zogenaamde odds-ratio's die laten zien hoeveel groter of kleiner de kans op een bepaalde klacht is voor respectievelijk rokers of ex-rokers ten opzichte van respondenten die nooit gerookt hebben[11]. Deze odds-ratio's zijn berekend met logistische regressie. Alleen de significante verbanden ($p < .05$) zijn in de tabellen vermeld.

Uit tabel 3.1. die gebaseerd is op de klachtenlijst van de enquête, blijkt dat vrouwen veel meer klachten rapporteren die samenhangen met roken dan mannen. De mannelijk respondenten rapporteren alleen meer klachten wanneer zij ofwel zware rokers zijn (meer dan 20 rookwaren per dag) of met roken gestopt zijn. Klachten van het bewegingsapparaat komen daarbij het meeste voor. Voor vrouwen ligt dat anders. Het aantal klachten neemt toe met de hoeveelheid rookwaren die dagelijks geconsumeerd worden, terwijl vrouwen die nog niet zo erg lang met roken gestopt zijn (maximaal 5 jaar) ook meer klachten rapporteren dan vrouwen die nooit gerookt hebben. Ook in de aard van de klachten zien we duidelijke verschillen tussen mannen en vrouwen: psychische klachten worden bij de mannen alleen door de zware rokers significant vaker genoemd, terwijl deze bij vrouwen in bijna elke categorie terugkeren. Ook klachten die met de spijsvertering verband houden, worden door vrouwelijke rokers en ex-rokers vaak genoemd.

De gegevens uit de gezondheidsdagboeken bevestigen dit beeld niet. Matige en zware rokers rapporteerden niet meer maar juist minder klachten, in het bijzonder mannen (zie tabel 3.2). Alleen vrouwen die vrij weinig roken noemden meer klachten dan vrouwen die nooit gerookt hebben. Ex-rokers rapporteerden wel meer klachten. Opnieuw rapporteerden vrouwen daarbij meerdere malen psychische klachten, terwijl onder mannelijke ex-rokers rugklachten en huidklachten meer voorkomen.

De volgende stap in de analyse hield in dat de bovengenoemde controlevariabelen (sociale positie en dergelijke) in de analyse werden opgenomen. Opnieuw worden alleen de significante samenhangen weergegeven. Deze kunnen nu geïnterpreteerd worden als de 'netto' samenhang tussen rookgewoonten en (de rapportage van) gezondheidsklachten, onafhankelijk van leeftijd, sociale positie of leefstijl. Wanneer de tabellen 3.3. en 3.4. met de voorgaande twee tabellen vergeleken worden dan blijkt er eigenlijk niet veel veranderd. Mannelijke zware rokers en ex-rokers rapporteerden ook 'netto' in de enquête meer klachten van het bewegingsapparaat, terwijl vrouwen (huidige en ex-rokers) vaker psychische klachten en spijsverteringsklachten noemden. Steeds is in de analyses vergeleken met respondenten die aangaven nooit gerookt te hebben. Ook voor de gegevens uit de gezondheidsdagboeken verandert er weinig. Met name mannelijke rokers gaven aan dat zij eerder minder dan meer klachten ervaren dan mannen die nooit gerookt hebben. Voor mannelijke ex-rokers zijn het nog steeds de rugklachten die significant vaker

Tabel 3.1. De samenhang tussen rookgewoonten en het aanstrepen van klachten op het invulformulier tijdens het vraaggesprek (gecontroleerd voor leeftijd). Samenhang met behulp van odds-ratio's (referentiegroep: personen die nooit gerookt hebben. Leeftijd: 25-64 jaar N=6569)

Rookgewoonten en méér klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers	♂	bewegingsapp.	1.28	.042
(gestopt > 5 jr geleden)	♀	bewegingsapp.	1.33	.010
ex-rokers	♂	hartklachten	1.52	.032
(gestopt ≤ 5 jr geleden)	♂	maagklachten	1.70	.010
	♀	psychisch	1.38	.013
	♀	bewegingsapp.	1.37	.015
	♀	buikklachten	1.37	.049
	♀	maagklachten	1.70	.006
	♀	gewicht	1.81	.000
lichte rokers (<10c/d)	♀	psychisch	1.31	.016
	♀	hartklachten	1.35	.046
	♀	maagklachten	1.47	.027
matige rokers (11-20 c/d)	♀	psychisch	1.48	.001
	♀	verkoudheid	1.31	.022
	♀	bewegingsapp.	1.28	.033
	♀	buikklachten	1.53	.002
	♀	maagklachten	1.65	.003
	♀	urineweg	1.53	.003
zware rokers (>20 c/d)	♂	psychisch	1.35	.013
	♂	verkoudheid	1.37	.012
	♂	oor/gehoor	1.54	.016
	♂	bewegingsapp.	1.54	.001
	♀	hoofdpijn/duiz.	1.47	.003
	♀	psychisch	1.89	.000
	♀	verkoudheid	1.45	.006
	♀	spijsvertering	1.53	.030
	♀	bewegingsapp.	1.51	.002
	♀	buikklachten	1.53	.007
	♀	maagklachten	1.98	.000
	♀	urineweg	1.47	.022
	♀	hartklachten	2.23	.000

Rookgewoonten en minder klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers	♂	verkoudheid	1.42	.008
(gestopt > 5 jr geleden)				

Tabel 3.2. De samenhang tussen rookgewoonten en het noteren van één of meer dagen met klachten in het gezondheidsdagboek (gecontroleerd voor leeftijd). Samenhang met behulp van odds-ratio's (referentiegroep: personen die nooit gerookt hebben. Leeftijd: 25-64 jaar; N=5655)

Rookgewoonten en méér klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers	♂	huidklachten	2.33	.045
(gestopt > 5 jr geleden)	♂	rugklachten	1.71	.010
	♀	oog/oor klacht.	2.41	.013
ex-rokers	♀	hartklachten	2.10	.029
(gestopt ≤ 5 jr geleden)	♀	psychisch	3.71	.009
	♀	oog/oor klacht.	2.27	.038
lichte rokers (<10c/d)	♀	psychisch	3.56	.006
	♀	urineweg	1.57	.029

Rookgewoonten en minder klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers (gestopt > 5 jr geleden)	♂	moeheid	1.49	.031
lichte rokers (<10c/d)	♂	hoofdpijn	1.61	.008
matige rokers (11-20 c/d)	♂	urineweg	6.03	.023
	♂	darm	2.36	.006
zware rokers (>20 c/d)	♂	urineweg	9.09	.037
	♂	moeheid	1.51	.032
	♀	luchtweg	1.78	.027

Tabel 3.3. De samenhang tussen rookgewoonten en het aanstrepen van klachten op het invulformulier tijdens het vraaggesprek (gecontroleerd voor leeftijd en sociale positie). Samenhang met behulp van odds-ratio's (referentiegroep: personen die nooit gerookt hebben. Leeftijd: 25-64 jaar N=6569)

Rookgewoonten en méér klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers	♂	bewegingsapp.	1.28	.048
(gestopt > 5 jr geleden)	♀	bewegingsapp.	1.32	.013
ex-rokers	♂	maagklachten	1.63	.021
(gestopt ≤ 5 jr geleden)	♀	psychisch	1.34	.025
	♀	bewegingsapp.	1.37	.016
	♀	buikklachten	1.47	.019
	♀	maagklachten	1.70	.007
	♀	gewicht	1.90	.000
licht rokers (<10c/d)	♀	psychisch	1.29	.028
	♀	maagklachten	1.46	.035
matige rokers(11-20 c/d)	♀	psychisch	1.42	.002
	♀	buikklachten	1.51	.004
	♀	maagklachten	1.57	.010
	♀	urineweg	1.47	.010
zware rokers (>20 c/d)	♂	bewegingsapp.	1.48	.003
	♀	hoofdpijn/duiz.	1.40	.013
	♀	psychisch	1.79	.000
	♀	verkoudheid	1.35	.032
	♀	spijsvertering	1.53	.030
	♀	bewegingsapp.	1.38	.018
	♀	buikklachten	1.48	.018
	♀	maagklachten	1.65	.011

Rookgewoonten en minder klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers	♂	verkoudheid	1.41	.012
(gestopt > 5 jr geleden)				
licht rokers (<10c/d)	♂	hoofdpijn/duiz.	1.32	.045

Tabel 3.4. De samenhang tussen rookgewoonten en het noteren van één of meer dagen met klachten in het gezondheidsdagboek (gecontroleerd voor leeftijd en sociale positie). Samenhang met behulp van oddsratio's (referentiegroep: personen die nooit gerookt hebben. Leeftijd: 25-64 jaar; N=5655)

Rookgewoonten en méér klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
ex-rokers	♂	zenuwstelsel	3.83	.030
(gestopt > 5 jr geleden)	♂	rugklachten	1.70	.011
	♀	oog/oor klacht.	2.17	.032
ex-rokers	♀	hartklachten	2.25	.021
(gestopt ≤ 5 jr geleden)	♀	psychisch	3.60	.013
light rokers (<10c/d)	♀	psychisch	3.70	.006
	♀	urineweg	1.55	.040

Rookgewoonten en minder klachten (p <.05)

Rookgewoonten	Sexe	Klacht	Odds-ratio	Sign.
matige rokers (11-20 c/d)	♂	urineweg	5.67	.031
	♂	darm	2.51	.004
zware rokers (>20 c/d)	♀	luchtweg	1.80	.030

genoemd worden. Onder vrouwelijke lichte rokers en ex-rokers komen ook nu weer de psychische klachten vaker voor dan onder vrouwen die nooit gerookt hebben.

Als deze analyse één ding duidelijk maakt dan is het dat het 'meten' van acute gezondheidsklachten nog geen eenvoudige zaak is. Afhankelijk van het instrument dat gebruikt wordt, komen zeer verschillende resultaten tot stand. Ietwat cru gesteld zou aan diegene die wil aantonen dat roken tot meer klachten leidt, aangeraden kunnen worden om daar een enquête met een klachtenlijst voor te gebruiken terwijl aan onderzoekers die juist het tegendeel willen 'bewijzen' het advies gegeven kan worden dat een gezondheidsdagboek het beste instrument is. Overigens valt op dat voor beide instrumenten geldt dat ex-rokers wel meer gezondheidsklachten hebben. Dat is in overeenstemming met de onderzoeksbevinding dat de meeste rokers stoppen omdat zij gezondheidsklachten beleven die aan het roken worden toegeschreven. Een andere verklaring gaat er van uit dat er voor ex-rokers geen reden meer bestaat om de klachten die zij als roker ook al hadden, weg te redeneren. Deze verklaring is onderzocht in het vierde artikel en wordt besproken in hoofdstuk vijf van dit rapport.
De grote verschillen tussen de klachtenrapportage in de enquête en in de gezondheidsdagboeken is aanleiding geweest om een methodologisch deelonderzoek te doen naar de herkomst van deze verschillen, dat hieronder in hoofdstuk 4 besproken wordt.

4. Het meten van acute klachten met enquêtes en met gezondheidsdagboeken

Uit verschillende onderzoeken, waaronder het onderhavige, is bekend dat gezondheidsklachten in de bevolking erg veel voorkomen (Huygen, Hoogen, Neefs, 1983; Van Sonsbeek, 1990b). Het optreden van gezondheidsklachten hoeft natuurlijk niet te betekenen dat men een slechte gezondheid heeft (Van de Lisdonk, 1985; Blaxter, 1990). Veel gezondheidsklachten hebben immers een alledaagse karakter en professionele hulp is zelden noodzakelijk omdat de klachten vanzelf verdwijnen. Artsen krijgen daarom alleen de top van de ijsberg van ziekte of 'morbiditeit' onder ogen en de registraties van artsen geven daarom ook geen compleet beeld van de ziektelast in de bevolking (Last, 1963; Van Es, 1984). Onderzoekers op het terrein van de volksgezondheid hebben zich meermaals afgevraagd hoe groot deze ijsberg nu eigenlijk is en hebben voor het meten van de morbiditeit in de bevolking zogenaamde gezondheidsenquêtes ontworpen. Aan een steekproef uit de bevolking wordt dan naar het optreden van klachten gevraagd. Voor het meten van de gezondheidstoestand gaat men daarbij af op het oordeel van de respondent zelf. Bijna nooit wordt bij dit type onderzoek een arts ingeschakeld (Mootz, 1984). Wanneer verschillende onderzoeken naast elkaar worden gelegd, valt op dat de resultaten ervan nogal uiteen kunnen lopen, wat geldt voor het meten van zowel acute als chronische klachten (Van den Berg en Van den Bos, 1989). Als we ons beperken tot het meten van acute klachten, die immers in dit onderzoek centraal staan, dan blijkt dat verschillende methoden tot zeer verschillende resultaten kunnen leiden. In het algemeen geldt dat met dagboekonderzoek meer klachten naar boven worden gehaald dan met retrospectieve enquêtes[12]. Ook wanneer een invulformulier als geheugensteuntje wordt gebruikt, is de score meestal hoger dan wanneer er met een open vraag gewerkt wordt. Zo variëren de Nederlandse schattingen over het voorkomen van acute klachten in 14 dagen van 40%, wanneer in een enquête met een open vraag gewerkt wordt, tot 80 % in onderzoek dat een invulformulier gebruikt (Van Sonsbeek, 1990b).

Verschillende auteurs hebben kanttekeningen geplaatst bij het meten van gezondheid met klachtenlijsten (Van der Zee, 1982; Van Sonsbeek, 1990a). Het belangrijkste punt van kritiek is, dat met klachtenlijsten niet de gezondheid maar neuroticisme of klaaggeneigdheid gemeten wordt. Door een waslijst van acute klachten voor te leggen, krijgen respondenten een duwtje in de rug om hun eventuele toestand van onwelbevinden te vertalen in een of meer van de klachten die op de lijst voorkomen. Het gebruik van een open vraag naar het voorkomen van klachten zou dit probleem kunnen ondervangen. Open vragen als: 'heeft u in de afgelopen periode gezondheidsklachten gehad en zo ja, welke waren dat' hebben echter het nadeel dat het moeilijk wordt om de antwoorden te coderen en onderling te vergelijken. Bovendien is het aannemelijk dat er bij een retrospectieve meting klachten vergeten worden. Voor dit probleem zou dan weer een prospectief instrument als een gezondheidsdagboek uitkomst kunnen bieden. Gezondheidsdagboeken vergen echter, zoals reeds gezegd is, een veel hogere motivatie van een respondent. In het derde concept-artikel van dit onderzoek zijn de voor- en nadelen van de verschillende methoden (dagboek versus enquête) en vraagstellingen (open vraag versus klachtenlijst) geïnventariseerd. Vervolgens zijn enkele hypothesen omtrent veronderstelde effecten van de methode op het antwoordpatroon getoetst. Het bleek hierbij niet mogelijk om alle combinaties van methode en vraagstelling onderling te vergelijken. In de enquête van de Nationale Studie is gewerkt met een klachtenlijst terwijl in het gezondheidsdagboek met een open vraag naar het voorkomen van

klachten gevraagd is. Deze twee combinaties zijn met elkaar vergeleken.

Er zijn zes hypothesen getoetst. De eerste hypothese heeft betrekking op het veronderstelde effect van neurotische labiliteit op het antwoordpatroon. Verwacht mag worden dat een hoge 'neuroticisme' score voor zowel dagboek als enquête samengaat met een grote kans om klachten te noteren. Voor de combinatie van de enquête met het invulformulier zal deze kans echter beduidend hoger zijn dan voor de combinatie van het dagboek met de open vraag. De klachtenlijst uit de enquête is tenslotte sensitiever voor neuroticisme dan de open vraag in het dagboek.

De overige hypothesen hebben betrekking op de mogelijkheid en de bereidheid van respondenten om de gezondheidsdagboeken nauwgezet bij te houden. Van respondenten die niet erg geïnteresseerd zijn in de onderwerpen 'gezondheid' en 'gezondheidszorg', mag verwacht worden dat zij minder gemotiveerd zijn tot het bijhouden van het dagboek. Omdat nu het dagboek meer werk vraagt dan het invulformulier van de enquête, mogen we bij hen grote verschillen verwachten met betrekking tot de rapportage van klachten. Het dagboek zal een lagere score te zien geven. Voor respondenten die wel hun interesse in deze onderwerpen kenbaar maken zal het motivatieprobleem veel minder spelen en zijn kleine verschillen in de rapportage plausibel. Hetzelfde effect van grote verschillen bij de dagboeken en kleine verschillen bij de enquête wordt ook verwacht voor: mannen, lager opgeleiden, respondenten met een ongezonde leefstijl, en voor respondenten die een drukke werkkring hebben dan wel werk en huishouding moeten combineren. Van mannen, lager opgeleiden en van personen met een ongezonde leefstijl wordt verwacht dat zij minder belangstelling hebben voor hun eigen gezondheid en minder op de signalen van hun lichaam letten dan vrouwen, hoger opgeleiden en personen met een gezonde leefstijl. Mensen die het erg druk hebben zullen enerzijds ook minder aandacht voor de signalen van hun lichaam hebben en anderzijds zal het invullen van het dagboek er soms bij inschieten.

Er zijn drie vergelijkende analyses uitgevoerd. Ten eerste is er gekeken hoe beide instrumenten verschillen als er geen onderscheid naar de aard van de klacht wordt gemaakt. Daarnaast zijn er twee vergelijkingen uitgevoerd voor het optreden van specifieke klachten. Op basis van eerder onderzoek naar de verschillen tussen de open vraag- en klachtenlijstmethode, is er voor gekozen om psychische en aan stress gerelateerde klachten en klachten van het bewegingsapparaat apart te analyseren (zie: Van Sonsbeek, 1990b). Voor de (deels vage) psychische klachten zal het effect van neurotische labiliteit nog pregnanter naar voren komen en tot grote verschillen tussen de instrumenten leiden, terwijl er voor de klachten van het bewegingsapparaat juist een grotere overeenstemming tussen de instrumenten zal zijn. Voor het rapporteren van een verstuikte enkel of een gebroken been zal het instrument tenslotte niet veel uitmaken, terwijl het noemen van (vage) psychische klachten in de klachtenlijst (bijvoorbeeld 'agressief gevoel' of 'snel opgewonden zijn' zie bijlage 2) direct aansluit bij de psychische dispositie van neuroticisme en klaaggeneigdheid en tot een verhoogde respons uitnodigt[13].

Het zou te ver voeren om hier volledig te beschrijven hoe alle variabelen gemeten zijn. De informatie over de zogenaamde achtergrondkenmerken van de respondent zijn ontleend aan de enquête (opleidingsniveau, werk- en rolbelasting, sexe, gezonde en ongezonde leefgewoonten, interesse in gezondheid en gezondheidszorg). In de enquête was geen instrument voor het meten van neuroticisme of klaaggeneigdheid opgenomen. Als vervanging hiervoor, is gebruik gemaakt

van de General Health Questionnaire (GHQ) (Goldberg, 1972) en de Biografische probleeminventarisatielijst van Hosman (Furer en Tax, 1987). Het gebruik van deze instrumenten is in het derde artikel verantwoord. Voor de statistische analyse werd gekeken naar het al dan niet optreden van een (specifieke) gezondheidsklacht in een periode van 14 dagen. De hypotheses hebben betrekking op zogenaamde interactie-effecten tussen de instrumenten, en zijn met logistische regressie getoetst. Hiervoor werden de respondenten aselect toegewezen aan òf de enquête- òf dagboekgroep. In tabel 4.1 zijn de resultaten samengevat.

Tabel 4.1. Samenvatting van de resultaten van de vergelijking van de dagboeken en de enquête voor de rapportage van klachten (sign. $p < .05$ tweezijdig)

Effect	Algemeen	Psychische klachten	Bewegingsapp.
psychische belasting	veel psych. klachten grotere kans klachten enquête	veel psych. klachten grotere kans klachten in enquête	niet significant
tijdsdruk	niet significant	niet significant	hoge tijdsdruk minder kans klachten dagboek
interesse in gezondheid	niet significant	niet significant	niet significant
sexe	niet significant	niet significant	niet significant
opleiding	lage opleiding	niet significant minder kans klachten dagboek	niet significant
leefstijl	zware roker minder kans klachten dagboek	lichte roker minder kans klachten klachten dagboek	lichte roker minder kans klachten dagboek

De analyse laat ondubbelzinnig zien dat een hoge mate van psychische belasting samengaat met een extra grote kans om klachten te rapporteren in een enquête waar met een klachtenlijst wordt gewerkt. Dat geldt zowel voor gezondheidsklachten in het algemeen als voor de min of meer vage psychische klachten. Voor klachten van het bewegingsapparaat treedt het verschil tussen dagboek en enquête niet naar voren, in overeenstemming met wat voorheen verondersteld werd. De hypotheses die betrekking hebben op de mogelijkheid en bereidheid om aan het dagboekonderzoek mee te werken, gaan in veel mindere mate op. Alleen het opleidingsniveau en rookgewoonten laten duidelijke verschillen zien, conform aan de hypothese. Zowel de tijdsbesteding, als de betrokkenheid bij het onderwerp 'gezondheid' en de sexe van de respondent doen er veel minder toe.

De conclusies die er uit deze vergelijking getrokken kunnen worden zijn de volgende. Ten eerste is inderdaad gebleken dat de combinatie van enquête en klachtenlijst gevoelig is voor de psychische gesteldheid van de respondent. Dat is eigenlijk ook niet verwonderlijk omdat de klachtenlijst die hier en elders gebruikt is (Van Sonsbeek, 1990b; Halfens, 1984) een reeks van vage psychische klachten bovenaan de lijst heeft staan. Een klachtenlijst waarbij deze klachten

een minder prominente plaats krijgen toegewezen, zou wellicht minder 'bias' ten opzichte van neuroticisme of klaaggeneigdheid laten zien. Een aanwijzing hiervoor is, dat voor gewrichtsklachten geen significant hogere score in de enquête opgetreden is. Het responspatroon bij de dagboeken doet vermoeden dat het bijhouden van gezondheidsdagboeken niet goed lukt onder personen met een lager opleidingsniveau (alleen lager onderwijs of lager beroepsonderwijs). De dagboekmethode lijkt dan ook niet geschikt voor een gezondheidsmeting waarbij een goede afspiegeling van de totale bevolking erg belangrijk is, zoals bijvoorbeeld epidemiologisch onderzoek en het onderzoek naar de relatie tussen sociaal economische status en gezondheid.

5. De relatie tussen gezondheids- en ziektegedrag

Eén van de meest opvallende kenmerken van de huidige samenleving is, dat we overspoeld worden met boodschappen die ons voorhouden dat we een gezonde leefwijze moeten nastreven. De gedachte hierachter is, dat de volksgezondheid vooral met een gezonde leefwijze van de bevolking bevorderd kan worden. Dat is nog eens nadrukkelijk naar voren gebracht in de Volksgezondheids Toekomst Verkenning, die om te beginnen stelt dat Nederland er in de toekomst, ondanks de medische mogelijkheden, nauwelijks gezonder op zal worden (Ruwaard en Kramers, 1993). De belangrijkste mogelijkheden voor de verbetering van de volksgezondheid liggen evenwel op het individuele vlak van de persoonlijke leefgewoonten, waarbij roken als een van de grote boosdoeners wordt aangewezen. Juist voor de rookgewoonten lijkt de boodschap van de gezondheidsrisico's in de afgelopen jaren succesvol te zijn geweest. In Nederland is met name onder mannen het percentage rokers drastisch gedaald, van 90% in 1958 tot 38% in 1991 (Gadourek, 1963; Stichting Volksgezondheid en Roken, 1992).

De trend van het afnemend aantal rokers is overigens in bijna de gehele westerse wereld te constateren. Uit internationaal onderzoek komt ook naar voren dat het percentage rokers vooral onder de hoger opgeleiden het sterkst gedaald is. In 1958 was het in Nederland nog zo, dat er onder de hoog opgeleiden meer rokers waren dan onder de lager opgeleiden (Gadourek, 1963). Deze relatie is volledig omgekeerd en rokers vinden we nu vooral onder personen met een lagere opleiding. Niettemin rookt nog meer dan een derde van de bevolking, terwijl toch de boodschap dat roken ongezond is, langzamerhand alle lagen van de bevolking bereikt heeft. Wanneer mensen stoppen met roken geven de meesten ook aan dat zij dat doen om hun gezondheid niet langer te schaden (NIPO, 1992). Ook is bekend dat veel mensen stoppen omdat ze gezondheidsklachten hebben die ze aan het roken toeschrijven. Uit onderzoek van de Stichting Volksgezondheid en Roken blijkt verder dat de helft van de huidige rokers zegt in het verleden een stoppoging te hebben gedaan, terwijl ook veel rokers aangeven op termijn te willen stoppen (Stichting Volksgezondheid en Roken, 1990). De tegenspraak tussen enerzijds de kennis over de schadelijke effecten van roken in combinatie met de wens om te stoppen, terwijl men anderzijds toch blijft roken, is een welhaast klassiek voorbeeld van een situatie van zogenaamde cognitieve dissonantie[14]. De centrale veronderstelling van de theorie is, dat de mens naar overeenkomst tussen zijn cognities streeft (Festinger, 1957). Als dat evenwicht door tegenstrijdige cognities verstoord wordt streeft het individu naar herstel van dat evenwicht. De cognitieve dissonantie die roken oproept zou gereduceerd kunnen worden door het roken op te geven. We hebben gezien dat veel mensen dat (uiteindelijk) ook gedaan hebben. Vanwege het verslavende karakter van roken lijkt dat echter niet de gemakkelijkste weg. De ontkenning van het verband tussen roken en longkanker, of de ontkenning van de eigen vatbaarheid voor deze ziekte zijn gemakkelijkere strategieën om dissonantie te reduceren. Nu is het evenwel opvallend dat in de 30 jaar dat de theorie van cognitieve dissonantie als zodanig bekend is, er weinig aandacht besteed is aan het gedrag bij ziekte als mogelijkheid voor de reductie en vermijding van dissonantie. Terwijl dat juist bij roken en andere ongezonde leefgewoonten voor de hand ligt.

In dit onderzoek zijn vier hypothesen over de relatie tussen gezondheids- en ziektegedrag getoetst[15]. Daarbij is niet alleen naar roken gekeken maar zijn ook drie andere, reeds genoemde

leefstijlkenmerken opgenomen: excessief alcohol gebruik, sportbeoefening en overgewicht als indicator voor voedingsgewoonten. Anders dan in het eerste artikel is er niet alleen naar de som van het aantal ongezonde leefgewoonten gekeken maar vooral naar de afzonderlijke effecten. Hierdoor is het mogelijk om voor elk van de riskante gewoonten een fijner onderscheid te maken. Daarnaast kan er een verschil optreden in de mate waarin dat een bepaalde leefgewoonte dissonantie oproept. Naar verwachting zal roken tot meer dissonantie leiden dan het gebrek aan lichaamsbeweging of alcoholconsumptie, omdat roken grotere risico's met zich mee brengt die ook algemeen bekend zijn. Ook tussen mannen en vrouwen zijn er verschillen in dissonantie te verwachten.

Er is een onderscheid gemaakt in huidige rokers (licht, matig en zwaar, zonder onderscheid naar het soort rookwaar), ex-rokers (wel of niet langer dan 5 jaar geleden gestopt) en personen die aangeven nooit gerookt te hebben[16]. Ex-rokers die lang geleden gestopt zijn, zullen in veel opzichten lijken op mensen die nooit gerookt hebben terwijl we op basis van het onderzoek van Blaxter verwachten dat ex-rokers die nog niet zolang gestopt zijn (maximaal 5 jaar) vrij veel klachten hebben. Voor ex-rokers bestaat er echter geen reden om deze klachten weg te redeneren. Door te stoppen is de dissonantie immers opgeheven. Het gebruik van alcohol is onderverdeeld in drie categorieën: personen die niet of zeer weinig alcohol drinken, lichte en matige drinkers en zware drinkers. Voor het gewicht zijn vier categorieën onderscheiden: ondergewicht, normaal gewicht, licht en matig tot zwaar overgewicht (zie ook de bijlage bij het vierde concept-artikel).

Voortbouwend op de theorie van de cognitieve dissonantie kunnen vier hypothesen opgesteld worden. We veronderstellen dat ongezonde leefgewoonten samenhangen met:
(1): minder interesse tonen voor het thema gezondheid en gezondheidszorg;
(2): tijdens het vraaggesprek minder gezondheidsklachten rapporteren als daarbij anderen (bijvoorbeeld familie, vrienden) aanwezig zijn.
Deze twee hypothesen worden getoetst met het materiaal uit het vraaggesprek.
Wanneer er gezondheidsklachten optreden, dan wordt er verwacht dat personen met een ongezonde leefstijl geneigd zijn:
(3): om deze klachten te bagatelliseren en
(4): dat zij niet veel belangstelling zullen tonen om de aard van de klachten te achterhalen.
Voor de toetsing van deze laatste twee hypothesen worden de gezondheidsdagboeken gebruikt.

Bij elk van deze hypothesen past een korte toelichting.
De eerste hypothese gaat er van uit dat dissonantie wordt gereduceerd of voorkomen door minder waarde aan gezondheid te hechten. Cognitieve dissonantie ontstaat immers alleen als de strijdige cognities voor het individu van belang zijn. Door nu bijvoorbeeld aan 'genieten van het leven' een grotere waarde toe te kennen dan aan gezondheid, zal minder snel dissonantie ontstaan en bestaande dissonantie gereduceerd kunnen worden. Tijdens het vraaggesprek heeft er geen directe meting van de waarde-oriëntaties van de respondent plaatsgevonden. Wel heeft de enquêtrice aan het einde van het gesprek genoteerd of de respondent geïnteresseerd was in de besproken onderwerpen of niet. We veronderstellen nu dat de waarde die men aan gezondheid hecht, voor anderen zichtbaar wordt in de interesse die men voor het onderwerp toont.

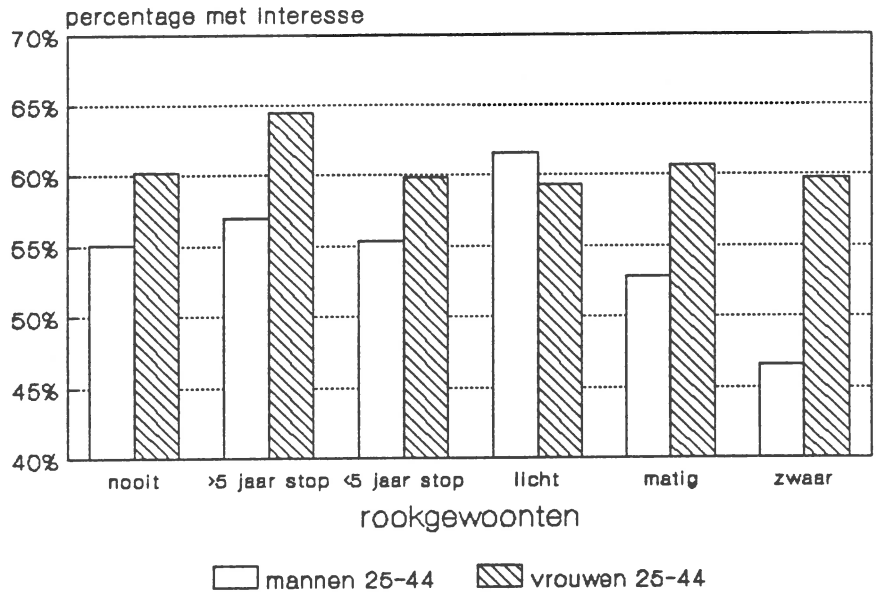
De overige drie hypothesen hebben betrekking op ziektegedrag, wat begint met de waarneming en rapportage van gezondheidsklachten (Mechanic, 1980). Het is een plausibele veronderstelling dat gezondheidsklachten dissonantie kunnen oproepen als zij veroorzaakt lijken te zijn door een ongezonde leefwijze. Daarbij gaat het niet alleen om de beleving en interpretatie van de klacht door het individu zelf maar ook om sociale druk wanneer de klachten duidelijk zichtbaar zijn. Mensen met een zware 'kater' worden er op gewezen om minder te gaan drinken, hoestende en kortademige rokers wordt geadviseerd om eindelijk te stoppen etcetera. Om de kritiek van anderen te vermijden en strijdige cognities te voorkomen of te reduceren is het eveneens plausibel dat vooral mensen met een ongezonde leefwijze gaandeweg leren om minder alert te zijn op klachten, wat in een eerder artikel reeds aan de orde gesteld is, en ook om gezondheidsklachten niet in het bijzijn van anderen te memoreren. Hierover gaat de tweede hypothese. Naar verwachting zal de aanwezigheid van anderen tijdens het vraaggesprek voor alle respondenten een remmende invloed hebben op het rapporteren van klachten. Voor respondenten met een ongezonde leefwijze zal deze remmende factor echter sterker aanwezig zijn dan voor anderen. We verwachten dus een interactie-effect tussen riskante gewoonten en de aanwezigheid van anderen op het aantal gerapporteerde klachten[17].

De hypothesen over de beleving van de gezondheidsklachten (hypothese 3) en de actie die ondernomen wordt om de klachten te verlichten (hypothese 4), kunnen getoetst worden met de gegevens uit de gezondheidsdagboeken. Per klacht werd gevraagd of deze klacht nieuw of onbekend is, al langer dan een jaar bestaat, hindert, zorgwekkend is, vanzelf over gaat en of men weet waarom men deze klacht heeft. Op elk van deze vragen kon met ja of nee worden geantwoord (zie voorbeeld van het dagboek in bijlage 1). In de gedachtengang van deze analyse zou de interpretatie van gezondheidsklachten als zorgwekkend er toe kunnen leiden dat dissonantie ontstaat of bestaande dissonantie versterkt wordt. Om cognitieve dissonantie te vermijden zullen personen met een ongezonde leefwijze meer dan anderen er toe geneigd zijn om de beschreven klachten als 'niet zorgwekkend' en 'gaat vanzelf over' te beschrijven. Er wordt verondersteld dat het bagatelliseren van gezondheidsklachten niet alleen voor specifieke klachten geldt maar als het ware een habitus is geworden van personen met een ongezonde leefstijl. Daarnaast gaan we er van uit dat personen met een ongezonde leefstijl minder dan anderen over kun klachten zullen praten of zich gericht over de aard van de klacht zullen informeren uit een boek of tijdschrift. De leefstijladviezen van anderen en informatie over gezondheid en ziekte zouden immers dissonantie kunnen oproepen of versterken. Tenslotte zullen zij enige innerlijke weerstand te overwinnen hebben om met hun klachten naar de huisarts te gaan, die hen wellicht zou adviseren om een gezondere leefstijl na te streven.

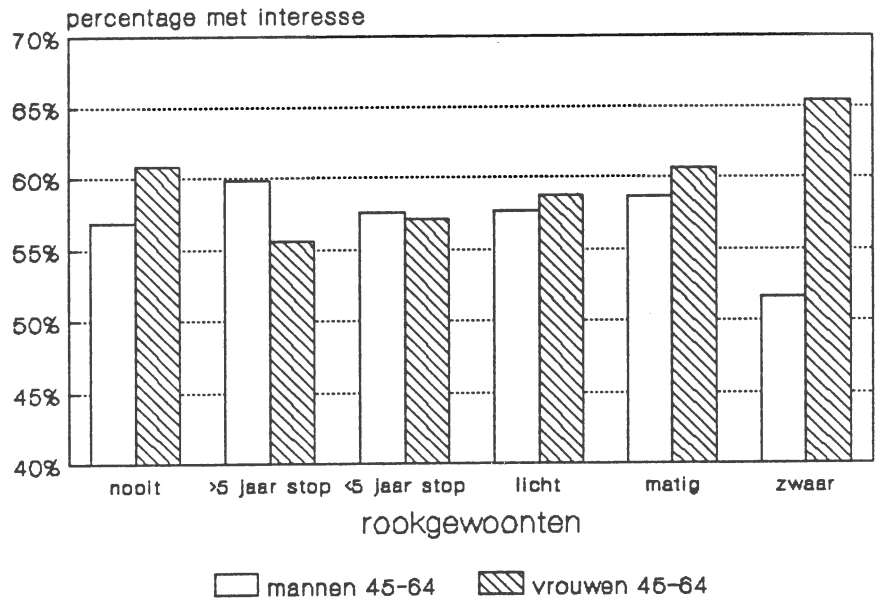
De gegevens uit de enquête zijn zowel middels bivariate kruistabellen (opnieuw in 2 leeftijdsgroepen: 25-44 jaar en 45-64 jaar) als met multivariate statistiek geanalyseerd. Steeds zijn er voor mannen en vrouwen aparte analyses uitgevoerd. De multivariate analyse had tot doel om de samenhang van de afhankelijke variabelen met leefstijl zonder vertekening van andere variabelen in beeld te brengen. Ook kan de multivariate analyse laten zien hoe belangrijk het gezondheidsgedrag is voor de verklaring van ziektegedrag, in vergelijking met een aantal reeds bekende determinanten van ziektegedrag. De resultaten van de analyses geven we per hypothese weer.
De kruistabelanalyse van de relatie tussen riskante gewoonten en het tonen van interesse in gezondheid, leverde slechts in één geval een significant verband op: onder mannen in de leeftijd

van 25-44 jaar bleek de interesse in gezondheid duidelijk af te nemen met de toename van het aantal dagelijkse geconsumeerde rookwaren (zie figuur 5.1 en 5.2).

Figuur 5.1. Het tonen van interesse in gezondheid en gezondheidszorg in samenhang met rookgewoonten



Figuur 5.2. Het tonen van interesse in gezondheid en gezondheidszorg in samenhang met rookgewoonten

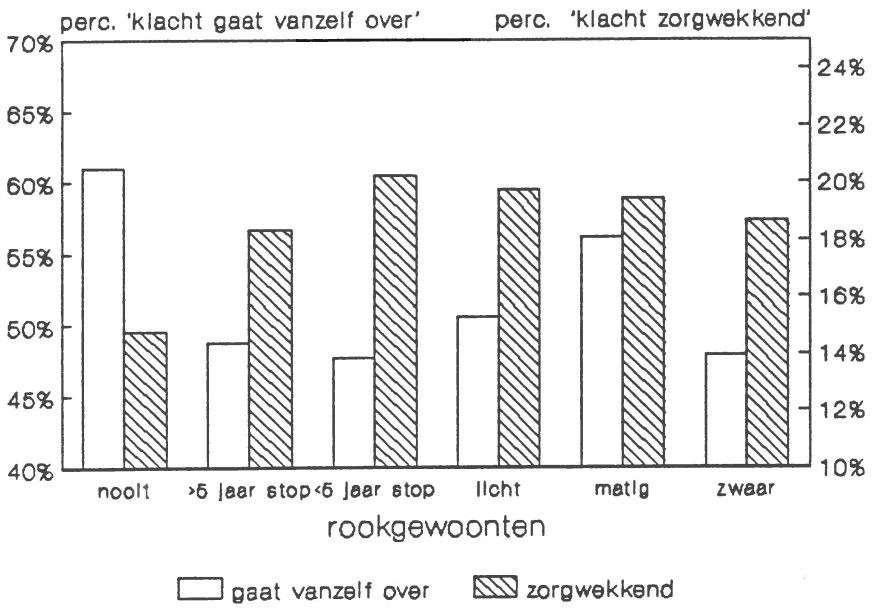


In de multivariate analyse werd het opleidingsniveau als belangrijkste controle-variabele toegevoegd. De samenhang tussen roken en interesse in gezondheid kan namelijk heel goed het gevolg zijn van de samenhang van het opleidingsniveau met enerzijds interesse in gezondheid en anderzijds met een ongezonde leefstijl, in dit geval dus roken. Deze analyse liet zien dat het tonen van interesse in gezondheid en de gezondheidszorg inderdaad vooral een kwestie is van het opleidingsniveau. Leefstijlkenmerken voegen daar weinig aan toe. Geen van de onderzochte riskante gewoonten levert een statistisch significante bijdrage (opgevat als $p < 0.05$), alhoewel een aantal hiervan bijna significant is. Dat geldt met name voor het tonen van 'gebrek aan interesse' door vrouwen. Vrouwen die niet aan sport doen en vrouwen die lichte of zware rokers zijn, behoren ongeveer tweemaal zo vaak tot de categorie 'ongeïnteresseerden' dan vrouwen die wel sporten en/of niet roken. De kans op het vinden van deze uitkomsten onder de nul-hypothese was echter niet kleiner dan 5% maar respectievelijk 7% en twee maal 9%. De gegevens ondersteunen de hypothese dus slechts in zeer geringe mate.

Ook de tweede hypothese werd verworpen. Wel bleek dat de respondenten in het vraaggesprek minder klachten rapporteerden wanneer daarbij anderen aanwezig waren. Wanneer de analyse echter uitgebreid werd met het huishoudenstype (alleenstaand of niet) en de variabele die het aantal riskante gewoonten aangeeft, verdween deze samenhang.

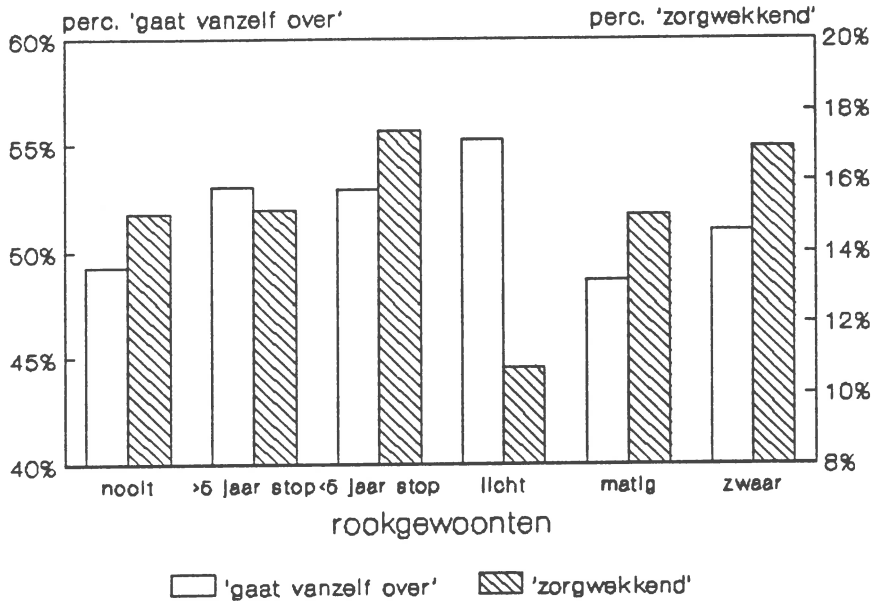
Ten aanzien van de derde hypothese gaat de analyse van de rookgewoonten wederom het meeste in de veronderstelde richting. Mannen die matig roken beoordelen hun klachten bijna net zo vaak als 'klacht die vanzelf over gaat' als mannen die niet roken (zie figuur 5.3.).

Figuur 5.3. Het oordeel over klachten als 'gaat vanzelf over' of 'zorgwekkend' (mannen: 25-64 jaar; n=1888)



Mannen die vroeger gerookt hebben of zware roker zijn, doen dat veel minder. De bivariate variantie analyse was significant (p = 0.0001). Onder de vrouwen zien we dat met name de lichte rokers zich erg weinig zorgen maken over de gezondheidsklachten die zij in het dagboek noteerden. Deze variantie-analyse was overigens niet significant[18].

Figuur 5.4. Het oordeel over klachten als 'gaat vanzelf over' of 'zorgwekkend' (vrouwen: 25-64 jaar; n=2266)



Voor zowel mannen als vrouwen geldt dat de ex-rokers die niet langer dan 5 jaar geleden met roken ophielden, zich het vaakst zorgen maakten over hun klachten. Uit een eerdere analyse kwam naar voren dat de vrouwelijke ex-rokers ook beduidend meer klachten rapporteerden dan vrouwen die nooit gerookt hebben. In de multivariate analyse van de interpretatie van de genoteerde gezondheidsklachten zijn de verschillende leefgewoonten en een aantal andere kenmerken van de respondenten als voorspellers van deze interpretatie opgenomen. De aanwezigheid van een of meer chronische aandoeningen, de psychische gezondheid van het individu (gemeten met de GHQ) en het aantal klachtdagen dat men in drie weken noteerde bleken belangrijke determinanten van het oordeel over de klacht te zijn. Opnieuw bleek de rol van riskante gewoonten relatief bescheiden. Alleen ex-rokers die niet langer dan 5 jaar geleden gestopt zijn, hebben ook nu een duidelijk ongunstiger oordeel over hun klachten dan personen die nooit gerookt hebben. Omdat verwacht werd dat met name huidige rokers hun klachten zouden bagatelliseren, kunnen we niet anders concluderen dan dat ook voor de derde hypothese geen bevestiging werd gevonden.

De vierde hypothese tenslotte heeft betrekking op de acties die men naar aanleiding van de klacht onderneemt. Er werd verwacht dat ongezonde leefgewoonten samengaan met weinig communicatie over gezondheidsklachten en een geringe neiging om zich over de aard van de klacht te informeren. In het gezondheidsdagboek zijn drie vormen van ziektegedrag vermeld die hiermee verband houden. De respondent kon aangeven of hij of zij met anderen over de klacht

heeft gepraat en of er een boek of tijdschrift geraadpleegd is. Tenslotte kon de respondent aangeven of hij of zij er die dag mee naar de huisarts is gegaan. Ontkennende antwoorden op deze vragen worden als bevestiging van de hypothese opgevat, onder de veronderstelling van 'constant houden' voor andere determinanten. Uit de literatuur is bekend dat ziektegedrag vooral samenhangt met de duur en de beleving van de klacht en de mate waarin men geneigd is om symptomen als afwijkend te bestempelen (Mechanic, 1978). In de multivariate analyses is voor deze en enkele andere determinanten (de gezondheidstoestand: aantal chronische aandoeningen en psychische gezondheid, opleidingsniveau, dagtaak) gecontroleerd. In de eerste multivariate analyse is gekeken naar het percentage van de dagen met klachten dat er ofwel met anderen over de klacht gepraat werd, ofwel dat men zich schriftelijk over de klacht informeerde[19]. De interpretatie en de duur van de klacht bleken inderdaad de belangrijkste determinanten van deze vorm van ziektegedrag te zijn. Over gezondheidsklachten lezen of praten doet men vooral als de klachten nieuw zijn, hinder of irritatie veroorzaken of wanneer men zich zorgen maakt over de klacht. Bestaande klachten (langer dan een jaar) geven daar veel minder aanleiding toe. Met name voor vrouwen geldt dat de mate waarin men over de genoteerde klachten praat of leest, met de leeftijd toeneemt en meer voorkomt onder vrouwen met psychische problemen (gemeten met de GHQ). De analyses laten verder zien dat rokers beduidend minder geneigd zijn om over hun klachten te praten dan personen die nooit gerookt hebben. Dat geldt ook voor vrouwen die reeds lang geleden met roken gestopt zijn. De weinige vrouwen die excessief drinken bleken juist wel veel met anderen over hun klachten te praten. Bij mannelijke drinkers lijkt eerder het omgekeerde het geval te zijn, hoewel net niet sprake is van een significante relatie.
Ook het bezoek aan de huisarts is vooral een zaak van de beleving van de klachten. De multivariate analyse had betrekking op de kans om tenminste eenmaal in de drie weken dat het dagboek werd bijgehouden de huisarts te bezoeken[20]. De kans dat men met een bepaalde klacht naar de huisarts gaat is vooral groot als de klacht nieuw is, hindert of irriteert. Met klachten die al langer bestaan of klachten waarvan men denkt dat ze vanzelf over gaan is men veel minder geneigd om de huisarts te raadplegen. Met betrekking tot de leefstijlkenmerken kwam alleen uit de analyse naar voren dat vrouwen met licht overgewicht meer geneigd zijn om de huisarts te raadplegen dan vrouwen met een normaal gewicht. Roken en drinken bleken niet significant samen te hangen met de kans op huisartsbezoek.

Deze analyse maakt duidelijk dat iemands gedrag bij ziekte slechts in een zeer geringe mate beïnvloed wordt door riskante gewoonten. In hoeverre biedt de theorie van de cognitieve dissonantie een verklaring voor deze relatie? Het enige resultaat dat op significante wijze in overeenstemming is met de hypothesen over cognitieve dissonantie, is dat rokers weinig geneigd zijn om met anderen over hun klachten te praten of er schriftelijke informatie over in te winnen. Niettemin zijn er ook andere onderzoeksbevindingen die op zijn minst de richting van de hypothesen wijzen. Dat zijn de geringe interesse in gezondheid onder jong volwassen mannelijke rokers, waar het lage opleidingsniveau wellicht verantwoordelijk voor is, en de bagatellisering van klachten door vrouwelijke lichte rokers en mannelijke matige rokers. Met de hier gebruikte gegevens bleek deze relatie echter niet significant. Een deel van de verklaring hiervoor is dat het om een secundaire analyse van bestaande gegevens gaat. Wellicht kan onderzoek waarbij de gegevens direct aansluiten bij de genoemde hypothesen, meer licht werpen op het effect van cognitieve dissonantie in de relatie tussen riskante gewoonten en ziektegedrag. Het is ook nuttig om nog even stil te staan bij het grote verschil tussen enquête en dagboek als het om de

rapportage van acute klachten gaat. Rokers vermeldden veel minder klachten in het dagboek dan dat zij in de enquête rapporteerden. Een van de verklaringen voor deze verschillen is dat het invullen van het dagboek veel meer werk betekende dan het éénmalig aanstrepen van acute klachten op een klachtenlijstje[21]. In het dagboek diende men voor elke klacht aan te geven hoe men deze klacht beleefde en wat er aan gedaan werd. Het gevolg hiervan is waarschijnlijk, dat alleen die klachten genoteerd werden die als abnormaal werden ervaren. De klachten die rokers in de enquête relatief vaak noemden zoals psychische klachten, aandoeningen aan de luchtwegen en maag/darm klachten, behoren waarschijnlijk tot het normale leefpatroon van alledag en worden niet als zodanig afwijkend ervaren dat vermelding in het dagboek werd overwogen. We kunnen hieruit concluderen dat een ongezonde leefwijze, en met name roken, de drempel om klachten waar te nemen verhoogt. Ook dit is een vorm van vermijding of reductie van dissonantie[22]. Deze conclusie werpt een nieuw licht op het hiervoor genoemde resultaat dat rokers weinig over hun klachten communiceren. Bij het opstellen van de hypothesen is er van uitgegaan dat het praten over gezondheidsklachten of het lezen daarover, gericht is op het verhelpen of verlichten van de klacht. De toelichting bij de gezondheidsdagboeken noemt dat ook met zoveel woorden. Het raadplegen van leken en literatuur kan echter ook plaatsvinden om uit te maken of een bepaald symptoom wel als een verschijnsel van een ziekte op te vatten is (Sarafino, 1990). Met deze interpretatie van lekenraadpleging ontstaat er meer samenhang tussen beide onderzoeksbevindingen. Rokers zijn weinig gespitst op de dagelijkse signalen van het lichaam. Ze zijn èn niet geneigd om deze verschijnselen als ziekte te benoemen èn ook niet geneigd om hierover een discussie met anderen aan te gaan die er wellicht toe zou kunnen leiden dat bepaalde symptomen alsnog als ziek of afwijkend beoordeeld worden. Dit gedragsrepertoire biedt hen de mogelijkheid om dissonantie te voorkomen of te reduceren. Wanneer echter van een klacht overduidelijk is vast komen te staan dat het om ziekte gaat, is deze interpretatie de belangrijkste drijfveer voor het handelen geworden en speelt cognitieve dissonantie een ondergeschikte rol.

6. De relatie tussen consumptiegeneigdheid, lekenadvies en doktersbezoek

De wijde verbreiding van de boodschap dat men er goed aan doet om een gezonde leefwijze na te streven, is zeker niet het enige teken dat er in de huidige samenleving erg veel waarde aan gezondheid gehecht wordt. Ook de aandacht voor gezondheid en gezondheidszorg in de media is daar een voorbeeld van. Het is dan ook geen wonder dat opinie-onderzoek laat zien dat mensen gezondheid als het hoogste goed beschouwen en daaraan ook een zeer hoge prioriteit toekennen als het gaat om het doen van overheidsuitgaven (Bronneman-Helmers, 1993). Met het belang dat aan de gezondheid gehecht wordt, gaat het hebben van hoge verwachtingen van de gezondheidszorg hand in hand. Te hoge verwachtingen soms, en huisartsen klagen dat veel patiënten met problemen bij hen komen die ofwel geen medisch probleem zijn, ofwel met zelfzorg op te lossen waren geweest (Van de Lisdonk, 1985). Toch laat onderzoek ook zien dat de meeste gezondheidsproblemen wel degelijk met zelfzorg opgelost worden en dat pas in laatste instantie om professionele hulp gevraagd wordt (Huygen, Hoogen, Neefs, 1983).

Het besluit om zich niet tot zelfzorg te beperken en hulp van buiten te zoeken is een intrigerend vraagstuk en reeds veelvuldig onderwerp van studie geweest (Cassee, 1973; McKinlay, 1981; Van der Zee, 1982; Van de Kar, 1992). Eén van de resultaten van dat onderzoek is dat het besluit om de dokter te raadplegen zelden alleen genomen wordt. Dikwijls wint men eerst het advies van familie, collega's of vrienden in, voordat men de verhoudingsgewijs grote stap naar de professionele hulpverlening zet. Het 'lekenadvies' luidt meestal dat men er goed aan doet om met de desbetreffende klacht naar de dokter te gaan (Elliot-Bins, 1973). Het komt echter ook voor dat men door het praten over de klacht tot de conclusie komt dat men symptomen heeft die veel mensen als heel gewoon en onschuldig ervaren zodat doktersbezoek eigenlijk niet nodig is (Cassee, 1973).

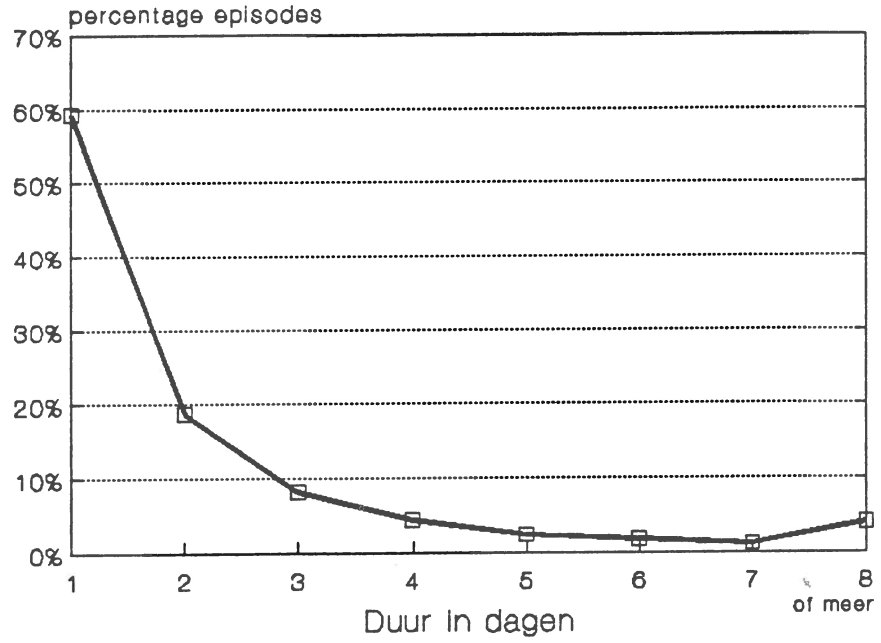
Met de gegevens uit de gezondheidsdagboeken kunnen we nader onderzoeken welke rol het praten met 'leken' speelt in het besluit om de huisarts te raadplegen. De dagboeken bieden ons prospectieve data die het mogelijk maken om na te gaan of het raadplegen van leken in het begin van een zogenaamde ziekte-episode de kans verhoogt om op één van de daaropvolgende dagen van deze episode de huisarts te bezoeken.

Het effect van lekenraadpleging willen we plaatsen in de context van wat wel 'consumptiegeneigdheid' genoemd wordt. In dit onderzoek richten we ons daarbij op de mate waarin de patiënt hulp verwacht bij alledaagse aandoeningen, waarvan huisartsen zelf vinden dat consultatie onnodig is. We verwachten dat er een wisselwerking bestaat tussen het raadplegen van leken en de consumptiegeneigdheid, waarbij deze elkaar versterken. Uit onderzoek is bekend dat personen in iemands sociale omgeving vaak gelijkluidende opvattingen hebben over het al dan niet raadplegen van dokters (Mootz, 1990). Wanneer iemand nu een bepaalde gezondheidsklacht ervaart en daarover met anderen praat, zal men bevestigd worden in de reeds bestaande attitude ten opzichte van huisartsbezoek. Mensen die niet snel een arts raadplegen zullen dat na dit gesprek nog minder snel doen, terwijl mensen die wel geneigd zijn om met alledaagse klachten naar de huisarts te gaan, vanuit hun omgeving vooral ondersteuning van deze houding zullen vinden.

Deze veronderstelling over de interactie tussen lekenraadpleging en consumptiegeneigdheid kan met de gegevens uit de dagboeken en de enquête onderzocht kan worden. Daartoe wordt uiteraard alleen gebruik gemaakt van de dagboeken waarin klachten vermeld staan. Per persoon zijn de opeenvolgende dagen met klachten tot episodes samengevoegd. Deze klachtenpisodes worden aan het begin en aan het einde begrensd door tenminste één klachtvrije dag. Voor de analyse zijn we met name geïnteresseerd in het gedrag tijdens nieuwe episodes, dat wil zeggen episodes waarvan het begin in de dagboekperiode valt. Episodes die waarschijnlijk al eerder begonnen zijn en op de eerste dag reeds aanwezig waren, zijn voor deze analyse buiten beschouwing gelaten. Hetzelfde is ook gedaan met de dagboeken waarin op elk van de 21 dagen een gezondheidsklacht genoteerd is. Het is niet erg waarschijnlijk dat het in het laatste geval om alledaagse klachten zal gaan, terwijl ons meetinstrument van consumptiegeneigdheid betrekking heeft op de verwachtingen bij alledaagse aandoeningen.

Van de respondenten van 15 jaar en ouder heeft 66% op een of meer dagen (in de drie weken van het onderzoek) een klacht genoteerd. Figuur 6.1. laat zien dat het merendeel van deze klachten van korte duur was.

Figuur 6.1. Duur van nieuwe ziekte-episodes in een periode van 3 weken (aantal episodes: N=10.947)



In tabel 6.1. is weergegeven hoe de duur van de episode samenhangt met de aard van de klacht, de interpretatie van de klacht en de acties die worden ondernomen. In deze tabel zijn ter vergelijking ook de episodes van 21 dagen opgenomen. Dit zijn dus de episodes van respondenten die op elke dag een klacht hebben genoteerd. Het is zeer waarschijnlijk dat deze klachten voor het onderzoek zijn begonnen en voortduurden na de drie weken van het dagboekonderzoek. Tijdens de kortdurende episodes werd meestal met zelfzorg volstaan (bijvoorbeeld met een huismiddeltje) terwijl de langer durende episodes opvallen door het gebruik van voorgeschreven

Tabel 6.1. Kenmerken van nieuwe ziekte-episodes (1-20 dagen) vergeleken met ziekte-episodes die de gehele dagboekperiode duren (21 dagen). De getallen zijn percentages van de episodeduur in dagen

	Duur (dagen)							
	1-2		3-7		8-20		21	
klacht *)								
- luchtweg	11		27		31		10	
- hoofdpijn/migraine	29		14		8		7	
- bewegingsapparaat	20		24		34		53	
- maag/darm	11		9		5		6	
- vermoeidheid/psychisch	13		14		13		11	
rest	18		12		8		13	
oordeel over de klacht **)								
- bestaande klacht (>1 jaar)	31		29		38		72	
- zorgwekkend	14		19		26		48	
- gaat vanzelf over	57		52		35		10	
ziekte-gedrag **)								
- staken dagelijkse activiteit	7		11		13		14	
- in bed blijven	2	(3)	5	(11)	6	(21)	3	(14)
- huismiddeltje gebruiken	12		15		13		9	
- gebruik niet voorgeschr. medic.	14		15		14		12	
- gebruik voorgeschr. medic.	10		16		33		43	
hulpzoekgedrag **)								
- praten met anderen over klacht	14	(15)	15	(29)	17	(45)	16	(53)
- naar huisarts	2	(3)	4	(13)	5	(38)	3	(35)
- naar andere hulpverlener	1	(1)	2	(5)	3	(14)	5	(30)
Aantal episodes	8543		1966		438		484	

Noot: Het getal tussen haakjes geeft het percentage aan dat een bepaalde handeling zoals het bezoek aan de huisarts, tenminste éénmaal gedurende een episode plaatsvond.

*) Vanwege afronden tellen de percentages op tot meer dan 100.

**) Meerdere antwoorden mogelijk.

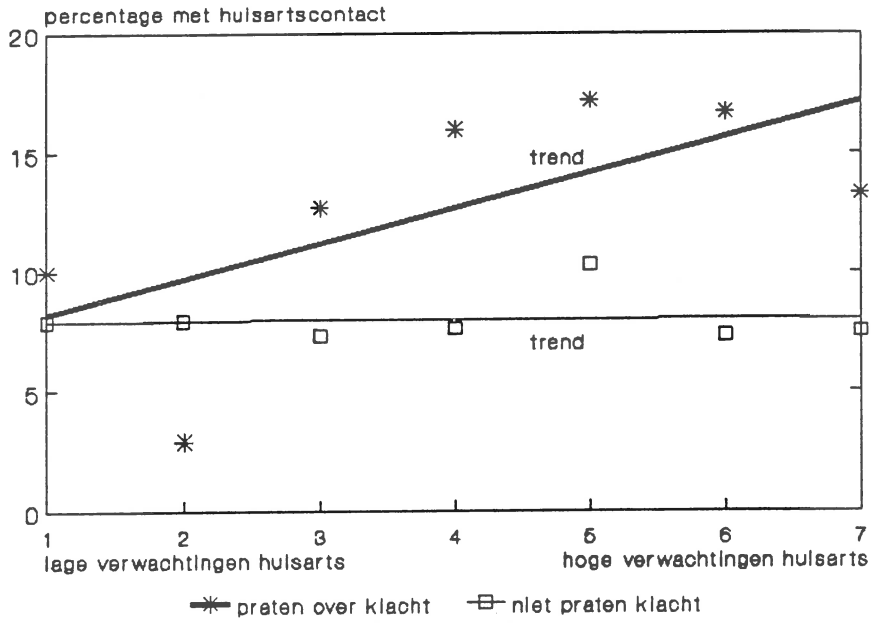
medicijnen en de hoge kans op huisartsbezoek. Bij de laatstgenoemde categorie blijken de klachten vaak al meer dan een jaar te bestaan en gaat het vooral om klachten van het bewegingsapparaat.

De consumptiegeneigdheid van de respondent is in de enquête gemeten met een vragenlijstje dat ook in eerder onderzoek een goede voorspeller van huisartsbezoek bleek te zijn (Van de Lisdonk, 1985). Aan de respondenten werden uitspraken voorgelegd over het raadplegen van de huisarts voor alledaagse klachten (hoofdpijn, keelpijn, griep, diarree etcetera). Hiermee is een attitudeschaal geconstrueerd. Deze schaal bleek een hoge interne consistentie te hebben (α = 0.90) (Foets en Sixma, 1991). Er is geen informatie beschikbaar over de consumptiegeneigdheid

van de personen waarmee de respondent over de klacht heeft gesproken. Ook weten we niet welk advies men van deze persoon of personen heeft gekregen.

De analyse van de klachtepisodes is in twee stappen verlopen. Als eerste is nagegaan hoe de consumptiegeneigdheid samenhangt met de kans op huisartsbezoek, waarbij een onderscheid gemaakt is tussen respondenten die wel en respondenten die geen leken hebben geraadpleegd, voorafgaand aan het huisartsbezoek. Figuur 6.2. geeft weer hoe groot de kans op huisartsbezoek is voor beide groepen.

Figuur 6.2. Percentage van de episodes met huisartscontact, in relatie tot lekenraadpleging, consumptiegeneigdheid



De figuur maakt duidelijk dat de consumptiegeneigdheid bijna uitsluitend in combinatie met het raadplegen van leken effect heeft op de kans om op een van de volgende dagen de huisarts te bezoeken. De trendlijn laat zien dat de combinatie van beide factoren vooral een verhoging van deze kans betekent.

Er is vervolgens een multivariate analyse uitgevoerd waarin rekening is gehouden met andere determinanten van huisartsbezoek. Dit zijn als eerste de zes variabelen die in het dagboek de beleving van de klacht in kaart brengen. Deze variabelen geven de antwoorden weer op vragen als: 'is het een nieuwe/onbekende klacht' of 'maakt u zich zorgen over de klacht'. Andere variabelen zijn ontleend aan het bekende schema van Andersen, die naast de consumptiegeneigdheid, de consumptienoodzaak en de consumptiemogelijkheid onderscheidt (Andersen & Newman, 1973). De consumptienoodzaak is aangegeven met drie indicatoren van de gezondheidstoestand: de 'ervaren gezondheid', de (naar ernst gewogen) som van het aantal chronische aandoeningen[23], en de psychische belasting van de respondent (hiervoor is de GHQ gebruikt). De consumptiemogelijkheid omvat de verzekeringsvorm van de respondent en zijn of haar tijdsbesteding

(werkend/niet-werkend etcetera). Aan de consumptiegeneigdheid is nog extra aandacht besteed door de tijdsperiode die tussen het huidige en het laatste huisartsconsult ligt, als variabele mee te nemen en ook te kijken naar specifieke interactie-effecten met de variabele 'lekenraadpleging'. Er is gekeken of lekenraadpleging voor mannen of vrouwen verschillend uitpakt en of het effect van de lekenraadpleging anders is als men kennissen heeft die in de gezondheidszorg werken.

De veronderstelde interactie tussen consumptiegeneigdheid en het raadplegen van leken bleek ook in de multivariate analyse significant bij te dragen. Het effect is echter relatief klein. De multivariate analyse liet verder zien dat de beleving van de gezondheidsklacht de beste voorspeller is van huisartsbezoek. In een voorgaand artikel hebben we dat ook reeds geconstateerd. Klachten die op de eerste dag werden opgevat als zorgwekkend en/of hinderlijk, verhoogden de kans op huisartsbezoek terwijl klachten waarvan men de oorzaak kent, en/of klachten die al langer bestaan of waarvan men dacht dat zij vanzelf over zouden gaan, de kans op een huisartsbezoek juist verkleinden. Respondenten die al geruime tijd niet bij de huisarts zijn geweest bleken ook nu met hun klachten niet snel naar de huisarts te gaan. De verzekeringsvorm en de dagelijkse tijdsbesteding van de respondent bleken niet significant bij te dragen en er kon evenmin een significant verschil tussen episodes van mannen en vrouwen geconstateerd worden. Opvallend was ook dat de gezondheidstoestand niet significant aan de verklaring van het doktersbezoek bijdroeg. De huisarts wordt kennelijk vooral geraadpleegd omdat de perceptie van een acute klacht daar aanleiding toe is, de gezondheidstoestand als zodanig is daarbij secundair. Er kon tenslotte geen verschil geconstateerd worden in het effect van lekenraadpleging door mannen en vrouwen en ook of men nu wel of geen kennissen had die in de gezondheidszorg werkzaam zijn, maakte weinig uit.

De belangrijkste conclusie die we uit deze analyse kunnen trekken is dat de combinatie van consumptiegeneigdheid en lekenraadpleging een stimulerend effect heeft op de medische consumptie. Het is niet zo dat er van het 'praten met anderen over de klacht' een ontmoedigende werking uit gaat, ook niet als men op zich niet erg geneigd is om de huisarts voor onschuldige klachten te raadplegen en de leden van iemands sociale netwerk dat waarschijnlijk ook niet zijn.

De analyse laat ondubbelzinnig zien dat effecten van consumptiegeneigdheid en lekenraadpleging relatief gering zijn. De perceptie van de klacht is de dominante factor als het gaat om de afweging om wel of niet naar de huisarts te gaan. Interessant is daarbij dat deze analyse een verfijning ten opzichte van eerder survey onderzoek betekent. In onderzoek waarin de percepties van de klacht niet zijn opgenomen maar de gezondheidstoestand wel, komt de gezondheidstoestand steeds als belangrijkste voorspeller naar voren (zie ook het bekende artikel van Mechanic uit 1979). Dat is op zich niet verwonderlijk omdat er een correlatie bestaat tussen de gezondheidstoestand en de perceptie van de klacht (zie ook concept-artikel 4)[24]. Wanneer echter ook de percepties bekend zijn, blijken deze toch uiteindelijk de doorslaggevende factor te zijn.

7. Conclusies en aanbevelingen

In dit onderzoek is de relatie tussen riskante gewoonten, gezondheid en ziekte vanuit een sociologische en sociaal psychologische invalshoek belicht. Er is niet gekeken naar de relatie tussen riskante gewoonten en ziekte in de medische zin van het woord.

Voor dit onderzoek zijn op twee manieren gegevens verzameld: er heeft een vraaggesprek plaatsgevonden waarin een gezondheidsenquête werd afgenomen, waarna aan de respondent werd gevraagd om in de drie weken daarna zelf het voorkomen van klachten in een gezondheidsdagboek te noteren. Hij of zij werd binnen het kader van deze instrumenten in staat gesteld om zelf een oordeel over de eigen gezondheidstoestand te geven en te beschrijven welke gezondheidsklachten er zijn opgetreden, wat men van de klachten vond en wat men er vervolgens aan gedaan heeft. Vanwege dit subjectieve karakter is dit onderzoek vooral een aanvulling op epidemiologisch onderzoek naar de relatie tussen riskante gewoonten en gezondheid, zoals dat bijvoorbeeld recentelijk is samengebracht in de Volksgezondheid Toekomst Verkenning van het RIVM (Ruwaard, Kramers, 1993). Het onderzoek laat op drie terreinen conclusies toe.

Ten eerste heeft het onderzoek duidelijk gemaakt dat de sociale positie van mensen, hun riskante gewoonten en de beleving van gezondheid onlosmakelijk met elkaar verbonden zijn. Mensen in goede omstandigheden (onder andere betaald werk, een eigen huis, een gezin met twee ouders, particulier verzekerd en goede sociale contacten) hebben zowel een goede gezondheid als gezonde leefwijze. Wanneer meerdere kenmerken van sociale positie ongunstig zijn dan is de gezondheid slechter en het gedrag ook ongezonder. Het is echter niet zo dat een ongunstige sociale positie de samenhang tussen gedrag en gezondheid teniet doet. Ook in een ongunstige sociale positie hebben personen met een gezonde leefwijze een gunstiger oordeel over hun gezondheid dan personen met ongezond gedrag.

Dit gedeelte van het onderzoek naar de relatie tussen sociale positie, leefgewoonten en gezondheid roept de vraag op hoe gezondheid nu het beste bevorderd kan worden. Het boek van Blaxter over 'Health and Lifestyles' gaat van de veronderstelling uit dat dit het beste zou kunnen gebeuren met het verbeteren van de sociale positie van mensen aan de onderkant van de samenleving, omdat het bevorderen van een gezonde leefstijl toch vooral de beter gesitueerden ten goede komt (Blaxter, 1990). Deze veronderstelling gaat niet op voor de gegevens die hier geanalyseerd zijn. De beperking van deze gegevens is dat het om de zelf gerapporteerde gezondheid gaat en we dus niet weten hoe deze relatie ligt voor geregistreerde morbiditeit en sterfte[25]. Niettemin wijzen onze gegevens er niet op dat we er nu maar vanaf moeten zien om gezond gedrag aan te moedigen onder de (enigszins) gedepriveerden in de samenleving[26].

Een andere kwestie is, of de pogingen om gedragsverandering in de richting van een gezonde leefwijze te bewerkstelligen wel effectief zullen zijn. We hebben reeds geconstateerd dat in het verleden vooral de hoger opgeleiden met roken zijn gestopt. Ook in andere opzichten lijken mensen met een betere sociale positie en een hogere opleiding meer open te staan voor gedragsverandering. Het bevorderen van gedragsverandering onder groepen met een lagere sociaal economische status is een stuk moeilijker en het zou best eens kunnen zijn dat de

gezondheidsvoorlichting en opvoeding in een fase van afnemende meeropbrengst terecht gekomen is. Wanneer het steeds meer inspanning vergt om gedragsverandering teweeg te brengen, staan we voor de vraag of de volksgezondheid niet effectiever bevorderd kan worden met maatregelen die de sociale positie van de zwakkeren in de samenleving versterken. Het gaat dan niet alleen om de financiële positie maar met name om sociale integratie, die in een land als het onze vooral door een grotere arbeidsparticipatie bevorderd zou kunnen worden. Met het bevorderen van sociale integratie zouden zowel de gezondheid als gezonde leefgewoonten bevorderd kunnen worden.

Ten tweede is onderzocht welke relatie er bestaat tussen riskante leefgewoonten en ziektebeleving. Uit de 'case study' naar de samenhang tussen rookgewoonten en de aanwezigheid van gezondheidsklachten kwam naar voren dat verschillende instrumenten tot zeer uiteenlopende conclusies aanleiding geven. Wanneer deze klachten met een zogenaamde klachtenlijst worden gemeten, blijkt dat naarmate er meer gerookt wordt er ook meer en diversere klachten voorkomen. Dat beeld wordt niet bevestigd in het dagboekonderzoek. Daar komen onder de rokers bepaalde klachten juist minder vaak voor. We moeten daarom de conclusie trekken dat een ondubbelzinnige meting van de samenhang tussen rookgewoonten en het voorkomen van gezondheidsklachten met het huidige instrumentarium niet goed mogelijk is. Overeenstemming tussen de instrumenten is er wel als het gaat om de verhouding tussen niet rokers en ex-rokers. Ex-rokers komen met beide instrumenten als een groep met meer gezondheidsklachten uit de bus.

Voor de verschillen tussen deze instrumenten zijn een aantal oorzaken nader onderzocht. Daaruit bleek dat een hoge score op de klachtenlijst met name afhangt van de psychische gesteldheid van de respondent, de aanwezigheid van één of meer chronische aandoeningen en de reeds genoemde rookgewoonten. Voor de dagboeken is dat in veel mindere mate het geval. Daar speelt vooral het opleidingsniveau een rol waarbij lager opgeleiden minder klachten noteren dan verwacht. De huidige klachtenlijsten zijn gevoelig voor de klaaggeneigdheid of het neuroticisme van de respondent. Niettemin hebben deze lijsten als groot voordeel boven open vragen, dat de resultaten reproduceerbaar zijn. Het verdient daarom aanbeveling voor het meten van acute klachten een nieuwe klachtenlijst te ontwerpen die dit nadeel niet heeft. Pas dan kan de relatie tussen leefgewoonten en 'illness' op adequate wijze onderzocht worden.

Ten derde werd geconstateerd dat ongezonde leefwijzen niet leiden tot een lagere kans op het inroepen van medische hulp bij acute klachten. Als een ongezonde leefwijze al samengaat met een geringere aandacht voor de eigen gezondheid dan is dat vooral in het stadium dat aan het inroepen van medische hulp vooraf gaat: bij het waarnemen van klachten en de communicatie daarover met leken in iemands omgeving. Met name rokers doen beide minder dan anderen, wat zou kunnen wijzen op de wens om cognitieve dissonantie te vermijden. Cognitieve dissonantie ontstaat wanneer men zich enerzijds bewust is van de gevaren van roken terwijl men anderzijds toch blijft doorroken. Er mag worden aangenomen dat langzamerhand in alle lagen van de bevolking bekend is dat roken ongezond is, zodat er onder rokers naar verwachting veel cognitieve dissonantie bestaat. De vermijding of reductie van dissonantie lijkt vooral plaats te vinden door een geringe neiging te ontwikkelen om symptomen als ziekte te benoemen. Er zijn in dit onderzoek geen sterke aanwijzingen gevonden dat cognitieve dissonantie vermeden wordt

door minder interesse voor het onderwerp gezondheid te tonen of de eigen gezondheidsklachten te bagatelliseren en/of minder professionele hulp te zoeken.

De waarde die aan gezondheid gehecht wordt komt niet alleen tot uitdrukking in de boodschap van de gezonde leefwijze maar blijkt ook uit de hoge verwachtingen die er aan de gezondheidszorg worden gesteld. Huisartsen vinden vaak dat de verwachtingen te hoog zijn. Bijna elke huisarts wordt tegenwoordig geconfronteerd met patiënten die doorverwezen willen worden of een medicijn willen zonder dat daarvoor een medische noodzaak bestaat (Van Dierendonck, 1992). Ons onderzoek laat zien dat het samenspel van consumptiegeneigdheid en zogenaamde lekenraadpleging, het bezoek aan de huisarts voor alledaagse klachten in de hand werkt. Voor veel alledaagse klachten is het onnodig om naar de huisarts te gaan. Gerichte voorlichting blijkt de zelfzorg bij deze klachten effectief te kunnen stimuleren, wat tot forse reducties in het aantal eerste consulten kan leiden (Kemper, Lorig, Mettler, 1993). Een belangrijke aanbeveling van dit onderzoek is dan ook om de bevolking niet alleen over de risico's van riskante gewoonten te informeren, daarvan zijn de gevaren genoegzaam bekend, maar ook over de mogelijkheden voor zelfzorg. De ruime verspreiding van boekjes als 'Wat doe ik, ga ik naar de huisarts' en het uitbrengen van medische encyclopedieën die de zelfzorg stimuleren, verdient dan ook van harte ondersteund te worden. In een tijd waarin aan gezondheid een hoge prioriteit wordt toegekend en waarin het scholingsniveau van de bevolking gestaag toeneemt moet het mogelijk zijn om patiënten niet alleen mondig te maken maar ook kundig, vooral als het gaat om de mogelijkheden van zelfzorg bij alledaagse aandoeningen.

Noten

1. In dit onderzoek heeft sociale positie niet alleen betrekking op de sociaal economische status (SES). Sociale positie omvat meer dan alleen de combinatie van inkomen, opleiding en het beroep dat men uitoefent. Sociale positie heeft ook betrekking op sociale integratie, de aard en omvang van het huishouden waartoe men behoort en de rol die men in de samenleving bekleedt (bijvoorbeeld werk/huishouden doen/werkloos of gepensioneerd zijn).

2. Een kruistabelanalyse voor alle leeftijdsklassen liet inderdaad zien dat de gezondheidsverschillen voor jong volwassenen (25-44 jaar) en personen van middelbare leeftijd (45-65 jaar) het grootst zijn.

3. Het Sociaal en Cultureel Planbureau heeft een secundaire analyse uitgevoerd van het Leefsituatie onderzoek uit 1986 en vindt ook dat ouders in eenoudergezinnen een slechtere subjectieve gezondheid hebben en meer 'ernstige spanningen' beleven dan ouders in tweeoudergezinnen en alleenstaanden (Van Delft en Niphuis-Nell, 1988).

4. Hier is natuurlijk sprake van een zekere mate van overlap tussen de verschillende kenmerken van sociale positie.

5. Respondenten konden aangeven tot welke categorie zij zich rekenden.

6. Personen met een WAO of AAW uitkering zijn buiten beschouwing gelaten. De precieze definitie van de deprivatie-index is uitgelegd in het concept-artikel. De vergelijkbaarheid met het Britse en Deense onderzoek is een belangrijk argument geweest voor de keuze van de verschillende kenmerken waaruit de deprivatie-index is opgebouwd.

7. Er is voor de presentatie van deze indicator gekozen omdat de scoreverdeling redelijk normaal verdeeld is (gemeten aan de scheefheid en de kurtosis). In het eerste artikel is een figuur opgenomen die weergeeft hoe het voorkomen van chronische aandoeningen samenhangt met deprivatie waarbij een onderscheid gemaakt is voor de aanwezigheid van een of meer ongezonde leefgewoonten.

8. In een eerdere versie van dit artikel werden alle vier riskante gewoonten beschreven. Het artikel werd hierdoor te lang, terwijl tevens bleek dat de samenhang tussen rookgewoonten en klachten het meest opmerkelijk was.

9. Om de respons te verhogen heeft de enquêtrice contact gehouden met de respondent over het invullen van het dagboek. Uiteindelijk heeft 85% van de respondenten het dagboek volledig ingevuld en met deze dagboeken wordt hier verder gewerkt.

10. In het concept artikel wordt erop gewezen dat leefstijl meer is dan een opsomming van riskante gewoonten en dat de gezondheidseffecten van een leefstijl niet altijd aan een bepaalde riskante gewoonte kunnen worden toegeschreven maar dat vooral het 'totaalplaatje' de gezondheid bepaalt. De kerkelijke betrokkenheid is hier als proxy variabele van dat totaalplaatje gebruikt.

11. De odds-ratio is als volgt gedefinieerd:

$$\frac{p1/(1-p1)}{p2/(1-p2)}$$

Deze maat wordt veel in epidemiologisch onderzoek gebruikt en geeft de verhouding tussen de percentages p1 en p2 weer zonder dat de absolute waarde van p1 of p2 een rol speelt.

12. Dat is niet het geval in het dagboekonderzoek waarvan hier gebruik gemaakt wordt. De verklaring hiervan is in het derde artikel aan de orde gesteld.

13. In de toelichting bij de gezondheidsdagboeken werd nadrukkelijk gevraagd om ook psychische en sociale problemen te vermelden. Er werden in de dagboeken dan ook veel meer als 'nervositeit' en 'vermoeidheid' gecodeerde klachten vermeld dan in de vergelijkbare studie van het Regioproject Nijmegen (zie bijlage A2 van het derde engelstalige artikel). Desondanks laat de analyse zien dat de klachtenlijst veel gevoeliger is voor het oppikken van dit soort klachten.

14. In Festingers boek over cognitieve dissonantie en veel leerboeken over de sociale psychologie wordt dit voorbeeld steeds weer genoemd. Ook Gadourek noemt het in zijn boek over riskante gewoonten.

15. Nauwkeuriger gezegd gaat het niet alleen om het reduceren van dissonantie wat veelal in experimenteel onderzoek aangetoond wordt, maar ook om het voorkomen dat dissonantie ontstaat. Het individu beschermt zich als het ware tegen het ontstaan van strijdige cognities. Vaak hoor je mensen zeggen "als je daar (consequenties van ongezond gedrag) over gaat nadenken dan moet je zoveel dingen opgeven". Een dergelijke uitspraak is een van de rationalisaties waarom het hier gaat.

16. De precieze definities zijn vermeld in de bijlage bij concept-artikel 4.

17. Het rapporteren van klachten aan een onbekende interviewer wordt niet als remmende factor opgevat; een enquêtrice zal er naar alle waarschijnlijkheid ook voor waken om leefstijladviezen te geven. De onderzoeksbevinding dat rokers in het vraaggesprek meer klachten hebben genoemd dan personen die nooit gerookt hebben, is hiermee in overeenstemming. Er is vanaf gezien om in het bijzonder op klachten te letten die wijzen op een ziekte die aan een bepaalde ongezonde leefgewoonte gerelateerd is. Een probleem bij deze specifieke klachten is dat de attributie van klachten aan een bepaalde, aan riskante gewoonten gerelateerde ziekte, vaak niet correct plaatsvindt. Het is daarom moeilijk om voor specifieke klachten te veronderstellen dat de respondent die al dan niet aan een of andere riskante gewoonte toeschrijft.

18. Deze en de bovenstaande analyse zijn variantie-analyses waarbij het percentage van de klachtdagen met een bepaald oordeel de afhankelijke variabele is en de rookgewoonten van de respondent (6 categorieën) de onafhankelijke variabele.

19. Het raadplegen van literatuur kwam erg weinig voor (1% van de klachtdagen) en is daarom samen gevoegd met het raadplegen van leken (13-15% van de klachtdagen). Beide kunnen worden opgevat als het zoeken van niet-professionele hulp of advies.

20. Met het toenemen van het aantal klachtdagen neemt ook de kans toe dat een bepaalde vorm van ziektegedrag tenminste eenmaal voorkomt. Deze situatie is vergelijkbaar met het hebben van meerdere loten in de staatsloterij waardoor de kans op een prijs toeneemt. Hoewel het plausibel is dat mensen met langdurige klachten eerder naar de dokter gaan dan met kortdurende klachten, is dit effect met deze analyse niet te scheiden van het 'loterij' effect. Het aantal klachtdagen moet daarom in de analyse vooral als controle variabele opgevat worden.

21. Een andere verklaring is dat de klachtenlijst in de enquête nogal sensitief is voor het meten van psychische klachten, die in onderzoek dat met open vragen werkt, een stuk minder genoemd worden. Uit dit en ander onderzoek is bekend dat rokers meer psychische klachten ervaren dan niet-rokers.

22. Omdat deze onderzoeksbevinding reeds bekend was kon deze niet opnieuw als 'nieuwe' hypothese getoetst worden.

23. De weging naar ernst is ontleend aan De Bakker, Claessens, Van der Velden (1992). In dat rapport werd van dezelfde gegevens gebruik gemaakt als in het onderhavige onderzoek. De lijst met 27 chronische aandoeningen, die aan de respondent werd voorgelegd, is naderhand ingedeeld in drie categorieën; licht (bijvoorbeeld hooikoorts, aambeien en spataderen), matig (bijvoorbeeld open been, rugklachten, gehoorafwijkingen) en ernstige aandoeningen (bijvoorbeeld CARA, gezwelvorming en diabetes). In de onderhavige analyse werden lichte chronische aandoeningen van de weegfactor '1' voorzien, de matige chronische aandoeningen kregen weegfactor '2' en de ernstige aandoeningen weegfactor '3'.

24. In de herziening van dit artikel zal er aandacht besteed worden aan de relatie tussen consumptiegeneigdheid en de perceptie van de gezondheidsklacht.

25. Dat er grote verschillen kunnen bestaan tussen gerapporteerde en geregistreerde morbiditeit blijkt onder meer uit het longitudinale onderzoek naar sociaal economische gezondheidsverschillen (Schrijvers et al., 1994).

26. Er wordt hier over 'enigszins gedepriveerden' gesproken, omdat de 'zwaar gedepriveerden' niet of nauwelijks in de enquête vertegenwoordigd zullen zijn.

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Bijlage 1. Voorbeeld van een pagina uit het gezondheidsdagboek.

9	0
10	5

01 ..... dag | datum .... - .... -19.... 11 12 13 14 15 16

		prima (1)	goed (2)	matig (3)	slecht (4)	zeer slecht (5)	
02	Ik voelde mij vandaag wat mijn gezondheid betreft:	☐	☐	☐	☐	☐	(17)
	Mijn gewone werkzaamheden gingen vandaag:	☐	☐	☐	☐	☐	(18)
	Mijn stemming was vandaag:	☐	☐	☐	☐	☐	(19)

03	Had U vandaag klachten over uw gezondheid? *(Met "klachten" wordt bedoeld ieder onaangenaam gevoel/verschijnsel of ander ongemak dat u stoort).*	Ja (1) ☐	neen (2) ☐	(20) *voor vandaag behoeft U verder niets in te vullen*

04	Ik had vandaag de volgende klachten: *(klachten die bij elkaar horen in één vak zetten. zie ook de toelichting)*	**klacht 1** ☐☐ 21 22	**klacht 2** ☐☐ 45 46

		ja (1)	neen (2)		ja (1)	neen (2)	
05	**met betrekking tot deze klacht(en)**						
	- deze klacht is nieuw/onbekend voor mij	☐	☐	(23)	☐	☐	(47)
	- deze klacht duurt al langer dan 1 jaar	☐	☐	(24)	☐	☐	(48)
	- deze klacht hindert of irriteert mij	☐	☐	(25)	☐	☐	(49)
	- ik maak me zorgen over deze klacht	☐	☐	(26)	☐	☐	(50)
	- naar mijn mening gaat deze klacht vanzelf over.	☐	☐	(27)	☐	☐	(51)
	- ik weet waarom of waardoor ik deze klacht heb	☐	☐	(28)	☐	☐	(52)

		zet een kruisje in de hokjes die voor U van toepassing zijn			
06	**Ik heb vandaag met betrekking tot deze klacht(en):**				
	- er helemaal niets aan gedaan	☐	(29)	☐	(53)
	- er met anderen over gepraat	☐	(30)	☐	(54)
	- er in een boek/tijdschrift over gelezen	☐	(31)	☐	(55)
	- het rustiger aan gedaan (ben vroeger naar bed gegaan)	☐	(32)	☐	(56)
	- meer lichaamsbeweging genomen/ontspanningsoefeningen gedaan	☐	(33)	☐	(57)
	- mijn normale dagelijkse activiteiten gestaakt	☐	(34)	☐	(58)
	- ben ziek in bed gebleven	☐	(35)	☐	(59)
	- extra op mijn voeding gelet/minder (niet) gerookt	☐	(36)	☐	(60)
	- geen (minder) alcoholische dranken gedronken	☐	(37)	☐	(61)
	- een huismiddeltje gebruikt	☐	(38)	☐	(62)
	- op doktervoorschrift medicijnen gebruikt	☐	(39)	☐	(63)
	- medicijnen gebruikt die ik in huis had of zelf gekocht hebt	☐	(40)	☐	(64)
	- hulp van familie vrienden/buren gekregen	☐	(41)	☐	(65)
	- vandaag naar de huisarts gegaan	☐	(42)	☐	(66)
	- vandaag naar andere hulpverlener gegaan	☐	(43)	☐	(67)
	- deed nog iets anders/gedaan	☐	(44)	☐	(68)

08 hart- vaatziekten	17 aambeien/open been/aderverkalking/ phlebitis/spataderen/arteriosclerose 12 angina pectoris, hartziekte/hartinfarct/ hartkloppingen/ritmestoornissen 13 beroerte/hersenbloeding 14 hoge bloeddruk 15 lage bloeddruk 74 bloeddruk controle 80 neusbloeding 64 pijn op de borst
09 spijsvertering maar niet maag/darm	24 galblaas/lever 67 lies, ingewanden breuk 72 alvleesklier 92 geelzucht 23 braken
10 darm	22 darm- en buikklachten cq. diarree, obstipatie e.a.
11 huidletsels	68 verwonding 53 insectenbeet
12 algemeen	01 mazelen/rode hond/waterpokken 60 bof 27 pfeifer 71 koorts 94 roodvonk
13 psyche	45 hyperventilatie 89 depressie/anorexia/neurose/psychose
14 mond	19 kiespijn/kaakpijn
15 moeheid	57 moeheid/nervositeit/slapeloosheid/stress
16 oog- oor-klachten	40 oorklachten 41 slechthorend 42 oogklachten 43 oogklachten

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Artikel 1.

Inequalities in health: The interaction of circumstances and health related behaviour.

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Inequalities in health: The interaction of circumstances and health related behaviour.

Results from the Health and Lifestyle survey (HALS) compared with studies from Denmark and the Netherlands.

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Abstract

This paper derives its main hypothesis from results of the Health and Lifestyle Survey as reported in Blaxter's monograph 'Health & lifestyles'. In this book it is argued that in a favourable social environment a healthy lifestyle matters but in a unfavourable social environment a healthy lifestyle does not make much difference. This hypothesis is tested with data from health surveys from the Netherlands and Denmark. The Dutch data showed a highly significant relationship of unfavourable material and social circumstances with both poor health and an unhealthy lifestyle. In turn, an unhealthy lifestyle was also related to poor health. The Danish study showed similar, although generally weaker, associations. When the British findings would apply to Denmark and the Netherlands, we should find an interaction between material and social circumstances and health related behaviour in their association with health and illness. Neither the Dutch nor the Danish data showed an interaction of the type that the British study assumes. The paper concludes with a discussion of the reasons why the findings from the UK could not be replicated.

1. Introduction

The research agenda on public health in the 1980s marked an increased interest in socioeconomic inequalities in health and illness. These inequalities are by now documented for many European countries and seem to be persistent despite rising standards of living (Fox and Carr-Hill 1989:4). The 'Health For All by the year 2000' programme of the WHO committed European Nations to a reduction of these inequalities by 25% between countries and between groups within countries (WHO 1988:140). How can this goal be achieved? The Health for All strategy is based on the assumption that a deeper understanding of the causes of these inequalities is a prerequisite for designing adequate policies. Since the publication of the Black report in the UK the debate mainly revolves around four explanations: (1) measurement artefact related to the Registrar General's definition of social class, (2) social or natural selection, (3) a 'materialist' explanation emphasizing social and material circumstances and finally (4) health related behaviour like smoking, alcohol consumption and diet, often referred to as 'lifestyle' (Blane 1985:423-45). Subsequent research since the publication of the Black report, provided valuable information on the relative importance of each of those explanations. Currently the artefact and selection hypotheses are considered less important than the materialist and the behaviourial explanations (Blane, Smith, Bartley 1993: 1-15). This paper deals with recent research on the latter two explanations and their policy implications.

There are obvious links between the alleged causes of inequalities in health and a public policy aiming at reducing them. If circumstances (adverse working conditions, unemployment, bad housing or limited access to health care) are responsible, this policy should accordingly be aimed at changing circumstances. If however the primary weight should be given to behaviour, policy should emphasize a healthy lifestyle. Determining which factor(s) carries the heaviest weight is not an easy task and the discussion seems to be influenced by political motives and cultural circumstances. In the UK a tendency exists to attribute inequalities to circumstances rather than holding the individual responsible for his or her behaviour. Not only because adverse circumstances come with poorer health but also because adverse circumstances leave

the individual less 'free choice' in adopting a healthy lifestyle (Hart 1986: 228-46). In the US some influential researchers have taken on a rather different attitude. Their main target is avoidable costs in health care and from this angle they bluntly ask if smokers and drinkers pay enough taxes to atone for their sins (Manning et al. 1989: 1604-09). It is probably not realistic (and probably not desirable too) to expect that the debate about the primacy of either circumstances or behaviour as cause of inequalities in health will be resolved in the near future with overwhelming evidence in favour of one particular explanation. Yet research in this area may help us to understand in more detail how both circumstances and behaviour are affecting health and how they interact with each other.

A recent British study based on the 'Health and lifestyle' survey made a substantial contribution to this aim. It gives a detailed account of the relationships between social circumstances, health related behaviour, attitudes on health and illness and a wide variety of health indices. Its emphasis is on the daily experience of health and illness rather than on specific diseases or mortality (Blaxter 1990: 7). After examining bivariate relationships, a final chapter in this study is devoted to the joint effect of circumstances (like social class, area of residence, social support) and behaviour upon various aspects of health and illness. The main conclusion is: "*if circumstances are good, 'healthy' behaviour appears to have a strong influence upon health. If they are bad, then behaviours make rather little difference*". (Blaxter 1990: 216). This is a remarkable finding which may be offering new insights into the complex nature of inequalities in health. Its policy implication seems to be that as long as adverse circumstances outweigh the effects of lifestyle for those in disadvantageous circumstances, policy should be aimed at changing those circumstances first, rather than emphasizing behaviourial changes of which only the already privileged members of society will benefit.

2. The scope of this paper

As an immediate reaction to this new viewpoint on socio-economic health differences, we asked ourselves if a similar relationship exists in other, comparable, Western-European countries. With data at hand from the Netherlands and Denmark, that provide information on social and material circumstances, health related behaviour and various indices of self reported health, we tried to test the main idea or hypothesis of the British study, realising of course that an exact replication is impossible with a secondary analysis of existing data. As stated, the core idea of the British study on health and lifestyle is that adverse circumstances outdo the effects of health behaviours in particular among the 'disadvantaged'. In our understanding, this assumption implies that advantage and disadvantage can be placed on a continuum or scale with disadvantage or deprivation on one end, referring to the cumulation of undesirable circumstances like being unemployed and being a single parent or being an widowed elderly person and having little social interaction. On the other end we find advantage or privilege, a situation where desirable circumstances cumulate, like living as a two-parent family in one's own home with a safe job, providing a regular source of income. Various mixtures of advantage and disadvantage exist in between those opposing ends.

Now if the conclusions of the British study are valid generally, we are to expect that differences in health that are related to 'lifestyle' are more pronounced among the privileged than among deprived. In the language of social research, we are to expect a statistical interaction between the effects of social and material circumstances and behaviour or lifestyle upon health[1]. The simplest test of this hypothesis would equally consider health behaviour as an additive scale of, for instance, dichotomous items (yes-no smoking etc) with a healthy lifestyle (all good health practices) on the one end and an unhealthy lifestyle on the other. Although various authors have criticised the practice of dichotomizing and the addition of various health behaviours, these scales have been used successfully to explain health differences (Belloc & Breslow 1972: 409-421; Slater & Linder 1988: 1216-1227). The interaction hypothesis is illustrated with the following graph.

Fig. 1. about here (expected interaction)

The graph displays that the illness level is higher (hypothetical figures) for people with an unhealthy lifestyle or in unfavourable circumstances. The different slopes illustrate the hypothesized interaction of circumstances and lifestyle in their effect on illness.

In this paper we will study this relationship with the Netherlands and Denmark as case studies. To our knowledge a similar analysis of this interaction has not been carried out yet in those countries or anywhere else, apart from the UK. In a recent Dutch study, the differences between countries in subjective experiences of health are compared (Kunst, Geurts, Van den Berg 1993). There are also studies from the Netherlands that examine both the effects of socio-economic status and lifestyles on health (Appels et al. 1990: 298-305; Ranchor et al. 1990: 121-135; Schroër and Bullinga 1991: 35-50; Uniken Venema and Hogendijk 1990: 93-118; Spruit 1987: 97-112). In those studies however, no attention has been paid to the interaction of circumstances and lifestyle. The choice of the Netherlands and Denmark is more pragmatic than anything else. We happened to have data at hand that provide us with ample information to address the research question: the Danish Health Study and the Dutch National Survey of General Practice (Bentzen et al. 1988; Bentzen et al. 1989:185-93; Foets et al. 1992).

The ordering of our material will be as follows. In the next section we summarize the results from the British study on lifestyle and health. They deserve mentioning here because in a later section we will examine the same relationships for the Netherlands and Denmark respectively. The sections to follow will be dedicated to a presentation of our own data and analyses from the Danish and Dutch health surveys. We conclude our paper with a discussion of our findings.

3. Health, lifestyle and circumstances in the UK

The Health and Lifestyle survey is a nationwide study conducted in 1984-1985 with a sample size of 9000 of adults of 18 years and over. Its results are presented in Mildred Blaxter's monograph 'Health and lifestyles' which contains an ordered presentation of the material from the survey (Blaxter 1990). A combined index of overall health shows a strong relationship with social class after the age of 40. For the elderly the class related differences in fitness and disease shrink, whereas the differences in illness and psycho-social health remain wide. From this we may conclude that the class related differences in health are most pronounced for the middle aged, say between 40 and 60 years. In terms of regional differences, the South and the East of the UK are areas where people in all respects have a better health than those living in the North, the West or the Midlands. The unemployed are in poorer health than the employed on all dimensions of health that the Health and lifestyle survey covers, with particular marked differences in psycho-social health. Also housing tenure shows to be associated with health; owner occupiers are in better health than council tenants, whether or not they belong to the manual class. Women who are single parents are in poorer health than women who are married or cohabiting. For the latter, living with or without children did not make much difference in terms of reported illness or psychosocial health. Those who have the fewest family, friendship, working and community roles have the lowest psycho-social health. This association of social integration and health holds for men and women alike in all social classes.

Blaxter's report also shows how these circumstances are related with health related behaviour. Smoking is strongly related with education, social class and area of residence, with the heaviest smokers in the industrial areas and among the manual classes. Men appeared to be drinking more than women and moderate or high levels of drinking were most common in traditional industrial and manufacturing areas. The relationship of social class with drinking is not wholly straightforward: in the industrial areas moderate and heavy drinking was most frequent among men in the manual

social classes, whereas in high status areas, men in the non-manual classes are the most frequent drinkers. Sports participation and exercise are very much age related with the highest level of exercise among the non-manual classes and those with a higher education. A good diet is more common among men than women and diet showed to be associated with social class and region which confirmed other research in this field.

Not surprisingly each of these behaviours is associated with the indices of health and illness in the survey. Smoking shows the largest effects with ex-smokers having the poorest health. High levels of exercise go with better health on all indices, with fitness obviously showing the strongest correlation. Keeping a good diet was particularly related to good psycho-social health. The association of alcohol consumption and health is less obvious; occasional and light drinkers have the best health with poorer health for abstainers and moderate to heavy drinkers.

These descriptions provide the groundwork for the exploration of the key issue: what is the combined effect of circumstances and behaviour on health and illness? This question is addressed with a detailed description of the available information that emphasizes the protective health effects of behaviour like exercise or a proper diet for those who live in advantageous or disadvantageous circumstances. One table in particular bears upon the central idea rather closely (Blaxter 1990: 220). It compares 'Health ratios' (the method of Standard Mortality Ratios applied to data on illness) of groups on both ends of the healthy-unhealthy behaviour scale; those with entirely healthy behaviour are contrasted with those who behave largely unhealthy (smoking, no exercise, poor diet). The health ratios of both groups are broken down along the dimensions of social class (manual versus non-manual) area of residence (cities/industrial/high status) and gender. Three indices of health are shown: illness (acute complaints) psycho-social health and fitness. With the main conclusion of the study in mind, one would expect that a cumulation of undesirable circumstances, like living in an industrial area and being of manual class, would be associated with small differences in the 'health ratios' and consequently that in favourable circumstances the differences in health ratios between the contrasted groups would be much larger. This

is by no means always the case: a comparison of groups with contrasting behaviour, who belong to the manual class and live in large cities or industrial areas, displays large differences in illness and psycho-social health, although small differences are to be expected. On the other hand are the differences in fitness between contrasting groups of men belonging to the non-manual class who live in high-status areas rather small, where in turn large differences would have been expected. In our opinion, the analysis of this table could have benefitted greatly from statistical testing. Be that as it may, the general idea of the differential effect of healthy and unhealthy lifestyles, for the privileged and the deprived, provides a new focus for research and debate on the issue of inequalities in health and as such deserves the attention from researchers from both the UK and other countries where these inequalities are studied. The results from two of these countries are reported in the remainder of this article.

4. Materials from Dutch and Danish health studies

This paper is based on a secondary analysis of two large data sets. The Dutch data come from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 surgeries, using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables (Foets et al. 1992). A random sample of 100 patients of each General Practitioner's list was approached for a health interview and asked to keep a structured health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (Total N = 11038). Drawing upon information about all patients listed with the 161 GPs, we could verify that the respondents to the survey did not differ significantly from the non-respondents in level of education. We have therefore no reason to believe that a under representation of the lower educated in our data will severely bias our findings. It should be noted that in the Netherlands only very few inhabitants (less then 1%) are not listed with a General Practitioner (Kohler 1992: 116). The sample of actual respondents could be considered representative for the Dutch population with respect to age, sex and marital status. Inhabitants of large metropolitan areas are however under represented.

The Danish data come from the Danish Health Study, a large longitudinal study conducted in 1983. The sample was drawn as a stratified sample and households were used as sampling units[2]. People living permanently in institutions were not included. In the sample, people over 65 were slightly underrepresented (11,4% versus 14,8% in the Danish population), while the age group 0-14 years was overrepresented (24,6% versus 19,4% in the population). In this paper we use data from the background interview in which 3419 persons participated (Bentzen et al. 1988).

In the previous section we developed the hypothesis which we tested with the data mentioned above. In order to do so adequately we used variables which are comparable with the Health & Lifestyle survey. In her study Blaxter assesses four

aspects of health related behaviour: smoking, alcohol consumption, exercise and dietary habits. In our analysis we used the same elements of lifestyle.

Health related behaviour

In the Dutch survey the respondents were asked about three aspects of health related behaviours: their alcohol and tobacco consumption and whether or not they actively engage in sports. They were not directly asked about their diet but instead asked to mention their length and weight with which the Body Mass Index can be calculated. The same type of information was obtained in the Danish survey, with slightly different questions and response categories.

The risks of health related behaviour are defined as dichotomous variables. In our study all types and frequencies of current smoking are considered a health risk, as is lack of exercise. In the Dutch questionnaire the respondents were only asked if they are actively participating in any sports. A negative answer to this question indicates risk. The Danish questionnaire offered more options to include other types of exercise, apart from leisure time sports participation, as well. In the Danish study lack of exercise was defined as either no participation in any kind of sports activities or no regular walking/cycling to and fro between home and work. Ordinary walking tours were not included as sports activities.

For both studies a Body Mass Index (BMI) of 27kg/m^2 was considered a threshold of obesity and consequently a health risk (Seidell et al. 1986: 586). The definition of the health risks of alcohol consumption posed more problems than the other aspects of behaviour. Several studies showed that the association of alcohol consumption and mortality is U-shaped with moderate drinkers at a lower mortality risk than heavy drinkers and abstainers (Marmot et al. 1981: 580-583). It is also well known that questionnaires do often not elicit accurate reporting of alcohol consumption (Lemmens 1991: 66). A recent Dutch study on the presence of unhealthy habits in the Dutch population, which also uses material from a questionnaire, dealt with the same problem in the following way (Bruin, de 1992: 5). It chose different levels of risk for

men and woman based on recommendations of the Royal College of General Practitioners (Royal College of General Practitioners 1986). For men, more than 28 glasses of alcohol in a week constitutes a health risk, whereas for women more than 21 glasses of alcohol in a week does so. Total abstinence of alcohol consumption was not considered a health risk, mainly because of ambiguities in the literature on this issue and the small differences in risk of contracting cardiovascular diseases between teetotallers and light drinkers.

The Dutch data that we are using offer information on the frequency of alcohol consumption during the week and the daily number of glasses. For men we considered '4 glasses or more every day' or '5 glasses or more almost every day' a health risk. For women we considered '3 glasses or more every day' or 4 glasses or more almost every day' a health risk. In accordance with the previous mentioned study total abstinence was not considered as hazardous to one's health. The Danish survey includes information on alcohol consumption on a normal week day and during a weekend. As the response categories were intervals of consumption of glasses, it was not possible to make the same distinction as in the Dutch survey. A consumption of either 4-8 glasses or more on a normal weekday or more than 8 glasses during a weekend was considered a health risk for both men and women.

In our analysis we only included respondents of ages between 25 and 65. There were several reasons to do so. Blaxter found that differences in health between socio-economic groups are in particular present in middle age, say between 40 and 60 years. Also the effects of a healthy or unhealthy lifestyle are not likely to be very pronounced in either young adults, for which the exposure to risk has not led to health complaints, or the elderly. The diminishing association of health and current lifestyle for the elderly is probably due to healthy survivor effect or to alterations in lifestyle in later life because of a worsening health.

In the analysis of the simultaneous effects of behaviour and circumstances upon health Blaxter excluded patients with limiting chronic diseases from her analysis. She argues that current health behaviour, in terms of lifestyle, is to some extent dictated by the

presence or absence of limiting disease. Individuals with limiting disease take less exercise and are more often non-smokers, which may be partly attributed to the presence of these chronic conditions. A similar procedure is carried out with the Dutch and Danish data. Rather then excluding all respondents with whatever limiting condition, we opted for excluding those with severe limitations. A Dutch paper which is based on the same data showed that in particular respondents who receive a disability pension are a group with very low ratings of subjective health and more chronic conditions and functional disabilities than any other socio-economic category (Bensing et al. 1991). We therefore excluded disability pensioners from our analysis. In order to compare the Dutch and Danish data the same was done with the Danish data[3].

Material and Social circumstances

Both the Dutch and the Danish study contain variables which allow for the construction of an index which combines various circumstances in what we may call an index of (multiple) deprivation or privilege. With this index of deprivation we can show the effect on health of a cumulation of adverse circumstances as intended in Blaxter's study. In the Dutch study the deprivation index is an additive scale consisting of the following variables: social class[4], degree of urbanization[5], housing tenure[6], type of health insurance (which is mainly used as a proxy to income)[7], living arrangement[8], and daily activities or sources of income[9]. In addition to those variables which mainly cover aspects of material deprivation the following variables were used to define social deprivation or privilege: having close friends, membership of voluntary organizations and visited someone or received visitors during the last month [10].

As single variables none of the material or social characteristics establishes deprivation, but a cumulation of low values on each of this variables (e.g. an unemployed single parent with no friends) does indeed. Around 6.5 percent of the respondents belong to the most deprived category (a net scoring result of -3 or less). On the other end of the scale are those individuals with high scores on all variables.

This situation constitutes privilege rather than merely the absence of deprivation, which is indicated by positive scores on the index. Around 14 percent of the respondents belong to this category (a net scoring result of +2).

In the Danish study the deprivation index is also an additive scale, and it consists of the following variables: social class[11], health risk in the work environment[12] , characteristics of the neighbourhood[13], living arrangement[14], income and daily activities or source of income[15]. Like in the Dutch study, three variables pertaining to social deprivation were included[16]. In the Danish data around 3 percent belong to the most deprived, whereas 17 percent are considered privileged[17].

In her account of the relationship between lifestyle and health Blaxter rightfully argues that health is by no means an unidimensional concept and means different things to different people (Blaxter 1990: 35). In an attempt to encompass a wide range of aspects of health and illness we use several indices.
From the Dutch Survey of General Practice we used five variables: subjective health evaluation (health)[18], the number of health complaints over the past two weeks (complaints)[19], the number of days with complaints as recorded in the health diary (days)[20], the presence of one or more chronic diseases (chronic)[21] and the level of psychological distress as indicated with Goldberg's General Health Questionnaire (ghq)[22].

The Danish study took its indices of health from the Rand Health Insurance Study (HIS) (Brook et al. 1979). In this paper six scales are used: Subjective evaluation of current health (current), limitation of physical abilities (phys), days with activity restrictions (days) and two mental health variables: positive wellbeing (poswel) and depression (depres). These Likert scales were all composed of items adopted from HIS and the application of the items in the Danish health Study is validated in Christiansen (1990) and Bentzen & Christiansen (1993; 207-210). In addition the Danish study used a checklist with chronic conditions with various degrees of impairments (Limchron).

Statistical Analysis.

In the course of the analysis of our data we first examined bivariate relations between circumstances and health, circumstances and behaviour and finally between behaviour and health for men and women separately in two age groups: 25-44 years; 45-64 years. In the next section we summarize the results on these relationships, emphasizing the patterns that emerge rather than reporting the results of each single statistical test. The strength of the reported relationships is analyzed with a number of Analyses of Variance and elaborations of crosstabulations. The results of these analyses are available on request from the first author.

The testing of the interaction hypothesis necessitated a multivariate procedure in which several health indicators act as response variables with social circumstances and health related behaviour as the main predictors. As health and illness are likely to be distributed differently for men and women and illness levels increase with age, sex and age were included as confounders as well. It was decided to use Multivariate Analysis of Variance (MANOVA) for this purpose, because we are interested in the effects of behaviour and circumstances across all dimensions of health and illness and by treating the response variables simultaneously in the analysis, MANOVA can greatly improve the power of our tests (Stevens 1986: 139). In our analysis we cannot assume beforehand that the main effects and the interaction between circumstances and behaviour are linear. We therefore treated both the number of material and social circumstances and the number of unhealthy habits as categorical variables, thereby allowing for linear and non-linear effects.

The MANOVA procedure is based on the assumption of multivariate normality of the response variables. A descriptive analysis showed that apart from subjective health in the Dutch data, the indicators of disease are skewed and more peaked than normal. The exploratory data analysis also revealed that some variables have outliers and extreme values. Taking either (natural) logs or square roots greatly reduced the number of outliers and improved skewness and kurtosis although strict normality was not achieved.

5. Results

This section briefly describes the associations of social and material circumstances with health and health related behaviour and the association of health related behaviour with the various indices of health and illness for both the Dutch and Danish health studies[23].

Circumstances and health

The results of the Dutch National Survey of General Practice resemble in many ways those of the British Health and Lifestyle survey. With regard to social class the respondents from the manual classes reported a poorer self perceived health than farmers and independent craftsmen or white collar workers. The respondents from the manual classes also reported more chronic conditions and generally had more acute complaints. In the age group 45-64 years their mental health (as indicated by the GHQ) was also poorer. In the younger age group of 25-44 years however, the mental health score was particularly poor for women of white collar occupational class. Housing tenure and health insurance were in this study mainly used as indicators of wealth and income. Both variables were consistently related to all variables measuring health with a better health for owner-occupiers and the privately insured. Differences in urbanisation do not seem to play a major role in explaining health inequalities in the Netherlands; only for mental health the results were clear-cut with the inhabitants of the largest cities having on average the poorest mental health. The unemployed are generally in poorer health than those having a job, with larger differences for men than for women. Most indicators of health showed that those who are living alone are on average in a poorer health than those who are living together with a partner or another adult, either with or without children. More often than not, the poorest health is found among respondents living in single parent families; an association that holds for both men and women. With respect to social integration we found that the presence or absence of close friends seemed in particular to be important to the health of women between 45 and 65 years of age, who reported poor health in the absence of close friends. For younger women and men no clear pattern emerged. The

other variables on social integration showed, with males in the age range from 45 to 65 as a notable exception, poorer health for those who are not a member of a voluntary organization or have not visited anyone or received visitors during the previous month.

In most respects the results from the Danish study are similar to the results from the Dutch study. Thus, a higher than average income is associated with good health as indicated with the 'current health' and the 'physical abilities' scales. Those with a higher income also suffer less from chronic conditions or depression and experience fewer days with activity restrictions. Living in a neighbourhood, that is not located in a deprived area comes with better current health, fewer chronic conditions and a higher level of well-being. The respondents of non-manual social class report higher scores on both the 'current health' scale and the 'physical abilities' scale. The unemployed were generally in a poorer health than those who have a job. Those who were living alone were generally in poorer health than those who were living with someone, although single parents were in most respects in a poorer health than any other category. Like the Dutch study, differences in social integration were associated with differences in health status, with better health for respondents who are more integrated within the society[24].

Taken together, these variables which indicate material and social circumstances add up to an index of deprivation. It should not come as a surprise that in the Dutch study this index was very consistently related to all indices of health and illness. This relationship is also present in the Danish study, but to a much lesser extent. The graphs below show how in each country the subjective or current health worsens when the number of unfavourable conditions increases.

Figure 2.a. Subjective health and circumstances (Dutch)

Figure 2.b. Current health and circumstances (Danish)

Circumstances and health related behaviour

The bivariate relationships between social circumstances and health related behaviour show remarkable parallels with the relationships between social circumstances and health that we examined above.

In the Dutch study smoking, overweight and sports participation are clearly class related, with the 'healthiest' behaviour among white collar workers. Also housing tenure and health care insurance show a similar pattern: home owners and those who are privately insured smoke less, are more active in sports and are less likely to be overweight than those who live in rented homes or are insured through a sickfund. For women in the age range from 25-45 years, smoking is in particular widespread among those who live in a single parents household. The unemployed smoke more than those who have a job, with the strongest relationship among males between 45-65 years of age. Drinking habits are a entirely different matter: for most variables there is no clear pattern and the relationships are generally weaker than those reported before. With regard to social class, it seems that in the age range 45-64, excessive drinking is more common among white collar workers than among people of other social classes. In the same age group also the privately insured reported higher levels of excessive drinking than those who are compulsory insured through a sickfund.

In the Danish study healthy behaviour was not unambiguously class related. In the age group 25-44 years, members of the manual occupational group participated less frequently in sports activities, were more often smokers and overweight. Their alcohol consumption was, however not significantly different from the non-manual occupational group. In the age group of 45-64 years, members of the non-manual group had a higher frequency of excessive drinking, compared to the manual group but sports participation, smoking and overweight differed not significantly between respondents from the manual and non-manual social class. Income was significantly related to a higher frequency of sports participation among both the younger and older age group. With respect to alcohol consumption a significant relationship was found for the younger age group only, with a higher rate of excessive drinking among

respondents with a less than average income. Income was not related to smoking or overweight. For the age group of 45-64 years, living in a privileged neighbourhood was related to a higher rate of sports participation and less smoking. Alcohol consumption or overweight was not related to neighbourhood. For the younger age group we did not find any significant relationship between neighbourhood and health related behaviour.

In addition to these mutual variables on behavioral health risks the Danish study included a variable which measures the perceived health risk at the work site. To our surprise we did not find a significant relationship between social class and the perceived health risk.

The following graphs show, on the aggregate level of the index of deprivation, how social and material circumstances are associated with health related behaviour in Denmark and the Netherlands. For smoking, exercise and overweight the Dutch data show a consistent increase in risky behaviour with the cumulation of disadvantageous circumstances ($p < .001$). Again, drinking stands out as being much less related to deprivation (n.s.). In the Danish study the cumulation of disadvantageous circumstances is increasing with smoking (n.s.), exercise ($p = .001$) and overweight ($p < .05$). For alcohol consumption the data show no consistent association with the degree of deprivation.

Figure 3.a. Risk related health behaviour and circumstances (Dutch)

Figure 3.b. Risk related health behaviour and circumstances (Danish)

Health and health related behaviour

Following the British Health and Lifestyle survey, we expected that four aspects of voluntary behaviour are in particular related to the daily experience of health and

illness: smoking, excessive drinking, diet (with overweight as a proxy variable) and exercise.

Not all of these aspects of a lifestyle were related to health in a similar way. In the Dutch study smoking was in particular related to a poorer mental health and a larger number of complaints over the past fortnight, which is more so for women than for men. Active sports participation went with a better self perceived health and lower illness levels for chronic conditions, for both men and women of all ages. Mental health however was only weakly related to sports participation. Also overweight turned out to be particularly associated with a lower self assessment of health and a higher number of chronic conditions. When overweight, women were more likely than men to consider their health to be rather poor. Drinking habits do not appear to be strongly related (almost never statistically significant) with the various aspects of health and illness that were measured in the survey. For women of ages between 45 and 65 the relationship was reverse to what has been expected, the (few) women who drink excessively reported lower illness levels than women who either drink less or not at all.

The Danish study showed a statistically significant association between smoking and a poorer health in terms of current health, physical abilities, well-being and depression. Overweight was associated with poorer current health, with a higher percentage of respondents with chronic and limiting chronic conditions, and with a lower score on the physical abilities scale. The respondents who participate in sports reported a better current health, a lower score on a depression scale and better physical abilities. Participation in sports was also associated with a smaller percentage of respondents with chronic conditions. Excessive drinking was in the Danish study not in any conclusive way related to the various indicators of health and illness.

The next two graphs show how the number of hazardous health habits relates to subjective health (Dutch) or current health (Danish). The graphs clearly demonstrate that those with a 'all healthy' behaviour have the best self perceived health.

Figure 4.a. Subjective health and hazardous health habits (Dutch)

Figure 4.b. Current health and hazardous health habits (Danish)

Results from multivariate analyses

After examining bivariate relationships between health, behaviour and social circumstances we now turn to the combined association of both circumstances and lifestyle with various indices of health and illness.

For the data from the Netherlands, successive modelling steps led to a model with 4 significant ($p < .05$) main effects (sex, age, behaviour, deprivation) and 2 interaction effects (deprivation * behaviour; deprivation * age). Only the final model is discussed in this paper [25]. It shows that sex (multivariate $F=49.14$; $p < .001$) and age (multiv. $F=81.25$ $p < .001$) have larger main effects than behaviour (multiv. $F=4.07$; $p < .001$) and deprivation (multiv. $F=1.58$; $p = .003$). The analysis of variance does not show the direction of the effects. These can however be obtained with separate tabulations. When comparing men and women, these tables show that women in particular are having high levels of current complaints (univariate $F=202.16$; $p < .001$). Ageing comes with an increasing number of chronic conditions (univ. $F=228.02$; $p < .001$) and with a less favourable subjective health (univ. $F=142.74$; $p < .001$) but does not necessarily mean a higher level of current complaints (univ. $F=0.36$;$p = .547$). A higher number of unhealthy habits is in particular related to poorer subjective health (univ. $F=11.07$;$p < .001$), which was shown before in figure 5. Adverse material and social circumstances accounted for a higher number of chronic conditions as is shown in a statistically significant main effect (univ. $F=3.96$; $p = .001$) and in interactions with behaviour (univ. $F=1.75$; $p = .035$) as well as with age (univ. $F=2.69$; $p = .020$). The interaction of deprivation and behaviour is of particular concern to us since it relates to our main hypothesis. The results of the multivariate and univariate analyses of variance of this interaction are presented in the following table.

Table 1. Manova: interaction behaviour & deprivation.

Does the significant interaction follow the hypothesized pattern in which the effects of

unhealthy behaviour are stronger for those in favourable social circumstances? This question may be answered with a plot of means, which have proven to be particularly useful for the inspection of interactions (Fox 1984: 105). The following graph shows the interaction of deprivation and behaviour for the number of chronic conditions.

Figure 5. Mean number of chronic conditions by circumstances and health habits (Dutch)

In the graph each of the different categories of deprivation has the same sex and age structure[26]. The differences in the mean number of chronic conditions are small for the privileged and widen for the middle categories. With an increasing number of adverse social circumstances these differences are narrowing again but widen among the most deprived. Other variables like mean subjective health (graph not shown), display a pattern in which ill-health increases gradually with an increasing number of unfavourable circumstances. An inspection of means also shows that health habits make a similar difference in health for both the deprived and the privileged, hence no significant interaction was found.

The multivariate analysis of the Danish data is based on a much smaller number of respondents (N=1402) than the Dutch study. The effect size therefore need to be much larger than in the Dutch study to attain acceptable levels of significance. Modelling of the Danish data resulted in a model with 4 significant ($p < .05$) main effects (sex, age, health related behaviour and deprivation) and 2 significant interaction effects. In addition the interaction of deprivation and behaviour was retained in the model because of our particular interest in this interaction effect.

The analysis of the Danish data shows that in particular age accounts for most of the variation in the scores of the six indicators of health and illness that we use from the Danish study (multiv. $F=16.56$ $p < .01$). Ageing is associated with poorer current health (univ. $F=19.22$; $p < .01$), less physical abilities (univ.$F=75.33$; $p < .01$) and with a higher number of limiting chronic conditions (univ. $F=17.24$; $p < .01$).
In the model the following variables had a significant main effect: Sex (multiv.

F=2.30; p = .03), health related behaviour (multiv. F=3.16; p < .01) and deprivation (multiv. F=1.92; p < .01). The significant interaction effects were the effect of age*sex (multiv. F=2.29; p < .01) and age*behaviour (multiv. F=3.14; p < .01).

Females scored lower on the health status measures, but only the effect of restriction of daily activities (phys) was significant (univ. F=5.63; p = .02). Health related behaviour was associated with a greater restriction of physical abilities (univ. F=8.55; p < .01), limiting chronic conditions (univ. F=9.02; p < .01) and activity restricted days (univ. F=7.97; p < .01), whereas deprivation was associated with less positive wellbeing (univ. F=4.52; p < .01), more depression (univ. F=2.72; p = .03), and limiting chronic conditions (univ. F=4.10; p < .01).

The effects of interaction between deprivation and behaviour which is of particular concern, is shown in Table 2. It appears that there is no interaction effect (multiv. F=0.78; p = .86), and even if the power of the tests are lower than in the Dutch case, their magnitudes are still substantial.

6. Conclusions and discussion

In this paper we examined the relationships between three groups of variables: social and material circumstances, indicators of health and illness, and aspects of health related behaviour or 'lifestyle'. It became evident that social and material circumstances are related both to health and illness, and to health related behaviour, with a better health and a healthier lifestyle among those who occupy a relatively privileged position within society. A healthier lifestyle was also associated with a more favourable opinion about one's own health and a lower number of reported acute health complaints or chronic conditions.

Although our analysis provided us with the general pattern of the relationships between the three groups of variables, we nevertheless encountered relationships that remained unclear. The ambiguity in the survey data about the association of alcohol consumption with both health and circumstances is a case in point. In both the Dutch

and the Danish studies we could not reach firm conclusions about either the relationship of drinking behaviour with the personal experience of health. In the Dutch study, the relationship between social or material circumstances and excessive drinking seem to contradict the other associations of deprivation and unhealthy behaviour. This was also found in another Dutch study on the relationship of lifestyle and health (Hulshof et al. 1991).

There are other studies from our respective countries that lend support to our findings. In the Netherlands, the Central Bureau of Statistics (CBS) carries out a continuous nationwide health interview survey with a sample size of approximately 10.000. An analysis of the combined data from the period 1983-1988 showed that indicators of social position like income, level of education and occupational prestige are inversely related to subjective health, the experience of health complaints and the number of chronic conditions (CBS 1991: 14-17). Another analysis of the CBS data from the period 1989-1990 revealed that the number of unhealthy habits was inversely related to education: the lower educated had more unhealthy habits. Unhealthy habits were in turn related to a poorer subjective health (Bruin, de 1992: 4-15). Two other Dutch surveys provided similar information (Halfens et al. 1984: 121-4; Loon, van 1992: 23-35). A recent Danish study (Rasmussen et al., 1988) showed that aspects of deprivation are related to health and health related behaviour. The study showed that blue collar workers and independents without subordinates rated their health status lower than other groups in the working population, and these groups also had a higher rate of persons with long standing disease. Prevalence of hampering symptoms were more frequent in the subordinate white collar group and among non-skilled workers. In general, the working population had a better health status compared to the non-working population when controlled for age and sex, except for unemployed and students. As to health related behaviour the greatest group of physical inactive during spare time could be found among the self employed in agriculture and urban trades and among unskilled workers. However, these groups had the highest percentage of physical active during working hours. The higher white collar group had the biggest percentage of persons who consume alcohol in a weekday, and who were aware of the good dietary habits. Non-skilled workers had the biggest percentage of

smokers, and the smallest percentage of persons who aimed at a health promoting behaviour.

A conclusion that may be drawn from all studies that we examined is that bivariate relationships between circumstances, health behaviour and health are fairly similar in Denmark, the Netherlands and the UK: the 'disadvantaged' of every society are in a poorer (self reported) health and, probably with the exception of drinking behaviour, have poorer health practices, than those in privileged circumstances. In each country it also true that poorer health practices generally come with poorer health. From these studies, that are all cross-sectional, it is difficult to establish if circumstances or behaviour are more decisive in shaping someone's health.

With this conclusion on bivariate relationships in mind, it is surprising that neither the Danish, nor the Dutch data support the hypothesis that in particular the privileged benefit from a healthy lifestyle. How may we account for the absence of this interaction between circumstances and lifestyle? Two explanations come to the fore. The first explanation is based on the differences in the way the data are handled in both studies. The British study aims at presenting descriptive results, whereas this paper aims at statistical testing of what is considered the main hypothesis. Despite the shortcomings of our analyses that lump both circumstances and behaviour in two uni-dimensional indices, these analyses have the advantage that the scientific criteria of statistical testing could be applied. This lack of statistical tests (in particular where it concerns the core assumption) is probably the main weakness of the British study, an opinion that is shared in one of the reviews of 'Health and Lifestyles' (West 1991: 577). Yet this reviewer maintains that the conclusion of the book is most likely to be well-founded and that: "*the effects of behaviours on health do appear in general to be greater in favourable compared to unfavourable circumstances*".
The second way of explaining the conflicting results would therefore rest on the assumption that, despite the differences in approach of both studies, the results that are reported in 'Health and Lifestyles' reflect genuine differences between the privileged and deprived of the British society, when it comes to the effects of health related behaviour. Differences that are not to the same extend present in Denmark

and the Netherlands. Why would that be? First of all it could be argued that the disadvantaged groups of society in Denmark and the Netherlands are relatively better off than those groups in the UK. The social and material circumstances that they find themselves in do not outweigh the effect of behaviour as it does in the UK. The following table shows that the disadvantaged groups are indeed better off in Denmark and the Netherlands[27].

Table 3. Indicators of socioeconomic development

It also shows that there is less income inequality in those countries, which leads to the second argument in favour of this explanation. Smaller differences in income would mean that the privileged and deprived are more alike in terms of material resources in Denmark and the Netherlands than they are in the UK. In that case is the hypothesized interaction effect probably not large enough to materialize in our statistical test.

In the end we have to conclude that this paper probably raises more questions than it answers. Its main purpose is to contribute to the discussion on the interplay of behaviour and circumstances in their effect on health. The British study on 'health and lifestyles' focused the attention to a particular form that this interaction might have. The idea that the privileged of society benefit more from adopting a healthy lifestyle than the deprived, is both new and provocative. It deserves more attention than this paper alone. Further research should extend the testing of the core hypothesis to include other industrialized countries as well. Equally important would be to extend the present study in another direction and to includes objective health indicators (mortality), preferably in a longitudinal design. The question that is raised in 'Health and Lifestyles' of who actually benefits from adopting a healthy lifestyle is important enough both from a scientific and from a public (health) policy point of view.

Notes

1.A similar description of the main idea in this study can be found in review of Health & Lifestyles (West 1991: 577-9).

2. In the Danish health study the sampling was carried out as follows. The sample was drawn as a stratified sample and households were used as sampling units. In the first step, a sample of geographical units was selected. By stratification it was made sure that greater municipalities were included. This would make the sample representative for the whole population with respect to age distribution and occupation. In the next step, a sample of addresses was drawn from each of the selected geographical units. Interviewers sought out the inhabitants at the selected addresses. If nobody could be found at home, they had an instruction to try again twice before a list of alternative addresses should be used. During the recruitment it was discovered that single-person households were underrepresented, and therefore the panel was supplemented with a number of such households, based on the list of already selected supplementary addresses.

3. A comparison with the British data is one reason to do so, on the other hand it may be argued that this particular group would exert undue influence in the analysis when they would for instance form a large part of the manual class. We also had difficulties with attaching a plausible deprivation score to these respondents, since disability pensioners are in the Netherlands for instance considerably better off financially than the unemployed. Moreover, the adoption of the sick role seems to be an issue here too. At present, and also at the time of the survey, the growing number of disability pensioners is a political issue of great public concern in the Netherlands. It is suspected that many who would otherwise be unemployed are making unjustified claims for a disability pension. Naturally, those who are granted a disability pension are under social pressure to demonstrate in their daily life and in an health interview that there claims are justly made. This observation does not imply that the authors believe that disability pensioners make unwarranted claims, it merely hints at the social pressures involved. In Denmark on the other hand, disability pensioners do not constitute an anomalous group. In some analyses of the Danish data disability pensioners without severe limitations of daily activities were included, mainly because of the smaller scale of the Danish study.

4. social class: manual/non-manual/independent farmers and craftsman (adapted from the schema developed by Goldthorpe and his coworkers, ref. Erikson, Goldthorpe, Portocarero: 1983)

5. Urbanisation: rural (< 30.000 inh.) /towns & suburban areas (30.000-50.000 inh.) /cities (> 50.000 inh. but not Amst., Rott., The H.) metropolitan areas (Amsterdam, Rotterdam, The Hague).

6. Housing tenure: rental home/owner-occupier

7. Health insurance: compulsory/private (wage-earners with a below modal income are compulsory insured through a sickfund).

8. Living arrangement: alone/one parent household/two parent household/two (or more) adults living together (married or unmarried)

9. Daily activities:employed (incl. unpaid employment, military service)/unemployed/housekeeping/full-time education/early retirement/else. (excl. disability pensioners).

10. Description of the index of deprivation for the analysis of the Dutch data.
The index aims to measure deprivation (or privilege) as a additive scale with the following variables:

- social class (manual: -1)
- area of residence (Amsterdam, Rotterdam, The Hague: -1)
- health insurance (private insurance: indicating a higher than modal income: +1)
- housing tenure (owner occupier: +1)
- social deprivation (no close friends: -1; no member of voluntary organizations: -1; no visitors or visiting others over the past month: -1)

a combination of living arrangement and daily activities (possible scores in parenthesis):

	alone (0/-1)	single parent (-1)	two parents (0)	two adults (0)
employed (0)	-1	-1	0	0
housekeeping (0/-1)	-2	-2	0	0
education (0)	0	-1	0	0
unemployed (-1)	-2	-2	-1	-1
early retirement (0)	-1	-	0	0

The daily activities of the partner or head of the household are considered as well. When the respondent is not belonging to the above mentioned employed category (unemployed, doing the homework or student) and when his or her partner or head of the household is either unemployed or a disability pensioner: -1. Disability pensioners themselves are not included. With these variables a simple additive scale is constructed which ranges from +2 (privilege) to -3 (deprivation), higher levels of deprivation are truncated. The index of deprivation is not a scale in the psychometrical sense. The aim of the index is to help in showing the effects of a cumulation of adverse of beneficial material and social circumstances.

11. Social class: Manual skilled and unskilled workers/ non-manual occupations,independent farmers or independent in urban trades.

12. A list with 12 questions about the respondent's assessment of the health risk of his or her work environment was presented. The respondent could also give a final evaluation of this health risk as either negligible, substantive or as 'some risk is present but it is not large'. This final question was used in the scaling procedure.

13. Neighbourhood: Area with blocks of flats and the respondent's house built of concrete / other types of neighbourhood.

14. Living arrangement: Alone/one parent household/two parents household or two adults.

15. Income: Under/above mean household income. Daily activities:Employed/housekeeping/full time education/unemployed/early retirement.

16. Friends: Number of close friends: No close friends/one or more close friends. Membership of voluntary org.: No membership/one or more memberships. Visits paid by or to friends during 1 month: Only once or less/more than once.

17. Description of the index of deprivation for the analysis of the Danish data.

The index is constructed with a content as close as possible to the Dutch index. It consists of the following variables:

- social class (unskilled and skilled manual: -1)
- income (household income greater than the mean income: +1)
- neighbourhood (not living in a concrete building and residential quarter not consisting of a block of flats: +1)
- social deprivation (no close friends: -1; no membership of voluntary organizations:-1; no visitors or visiting during the past month: -1)
- health risk (substantive: -2, some: -1)

a combination of living arrangements and daily activities (possible scores in parenthesis):

	alone(0/1)	single parent(1)	two parents(0)
employed(0)	-1	-1	0
housekeeping(0/-1)	-2	-2	0
education(0)	0	-1	0
unemployed(-1)	-2	-2	-1
early retirement(0)	-1	-	0

In the Danish study, relevant information was obtained for both the male and female head of a household. When one adult in a two adults household parent is not working, and the other is unemployed, the first parent is assigned a score of -1.

18. Subjective health Q: How would you in general consider your health? :
A: very good (1), good (2), not good but also not bad (3) bad (4) very bad (5)

19. A checklist with 42 common symptoms (precoded) and 3 open ended questions was presented. The total number of symptoms was used for this variable.

20. Only diaries with entries (symptom yes/no) on all 21 days of the diary keeping period were used.

21. A checklist with 25 chronic conditions and 2 open questions was used. The severity of the conditions was rated on the basis of a paper from Van den Berg & Van den Bos (1989) with some minor alterations.

22. The 30-item version was used which was translated in Dutch.

23. These descriptions are based on separate breakdowns for men and women in two age groups. At times these tables do not show statistical significant relationships which are significant in the ANOVAs, due to the larger numbers in the ANOVA and the compounding of effects.

24. When comparing the Danish and the Dutch data, we have to bear in mind that the Dutch sample is seven times larger than the Danish. Consequently, the analysis of the Danish data will only yield significant results for the strongest relationships.

25. Technical details about the MANOVAs in the Dutch and the Danish study. With the exception of AGE all explanatory variables are treated as categorical and thereby allowing for linear and non-linear effects. The response variables are treated as interval although strictly speaking the variable measuring SUBJECTIVE HEALTH in the Dutch data is ordinal. The MANOVAs assess the differences between the means of the cells in the multidimensional table that is constructed along the dimensions of the categorical variables for all response variables simultaneously while controlling for AGE as a covariate. The regression approach of MANOVA is used, indicating that parameters reflect separate contributions of explanatory variables holding the other explanatory variables constant. Model building started with a model that includes the four first-order effects of AGE, SEX, BEHAVIOUR AND DEPRIVATION and the 6 second-order effects of bivariate interactions. Higher order interactions were pooled because of empty cells. In subsequent steps clearly non-significant effects ($p > .10$) were deleted. The tables presents multivariate and univariate F statistics with their p-value and post hoc estimates of power ($p < .01$).

26. By applying weights each of the categories of DEPRIVATION obtained the sex and age distribution of the total sample within the age range 25-64 years.

27. These cross sectional data can be complemented with data on social mobility in terms of 'standard of living'.A recent cross national study shows much higher rates of downward social mobility in the UK than in Denmark and the Netherlands (Ultee and Luijkx 1986: 191-206).

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Table 1. Interaction of Deprivation and Behaviour in MANOVA with five Indicators of Health as Response Variables and Deprivation and Health Behaviour as predictors. Data from the Dutch National Survey of General Practice (N=5399).

Effect	Test (multiv)	F	Sign.	Power	Response variable	F (univ.)	Sign.	Power
DEPRI-VATION *BE-HAVIOUR	Pillais	1.57	.001	1.00	HEALTH	1.07	.379	0.48
	Hotellings	1.57	.001	1.00	√COMPLAINTS	1.21	.256	0.56
	Wilks	1.57	.001	1.00	Ln(GHQ)	1.15	.306	0.53
					√CHRONIC	1.75	.035	0.82
					√DAYS	1.59	.069	0.76

Table 2. Interaction of Deprivation and Behaviour in MANOVA with six Indicators of Health as Response Variables and Deprivation and Health Behaviour as predictors. Data from the Danish Health Study 1982-83 (N=1402).

Effect	Test (multiv)	F	Sign.	Power	Response variable	F (univ.)	Sign.	Power
DEPRI-VATION *BE-HAVIOUR	Pillais	0.78	.858	0.77	√CURRENT	0.65	.738	0.13
	Hotellings	0.78	.859	0.77	√POSWEL	0.59	.791	0.11
	Wilks	0.78	.859	0.61	√DEPRES	0.61	.767	0.12
					√PHYS	0.24	.982	0.04
					LIMCHRON	0.44	.173	0.42
					√DAYS	0.96	.464	0.23

Table 3. Indicators of socio-economic inequalities

	Income inequality Gini[1]	Poverty rates households[2]		Social protection expenditure[3]
	1983-1986	1980	1985	1988
Belgium	0.27	6.3	5.2	28.7
Denmark	0.27	8.0	8.0	28.5
France	0.34	18.0	14.8	28.3
Netherlands	0.28	6.9	7.9	30.7
Great Britain	0.34	14.1	18.9	23.6
West-Germany	0.32	10.3	9.2	28.1

1. Gini coefficients. Source: Korpel et al. 1989.

2. Poverty is defined as having less than 50% of the equivalent mean national expenditure of adults of one's country. Source: Eurostat. 1991.

3. The share of social protection expenditure in GDP. Social protection encompasses the costs of health, old age, housing, unemployment, family/maternity. Source: Eurostat 1991.

Fig. 1. Expected interaction of
circumstances and lifestyle on illness

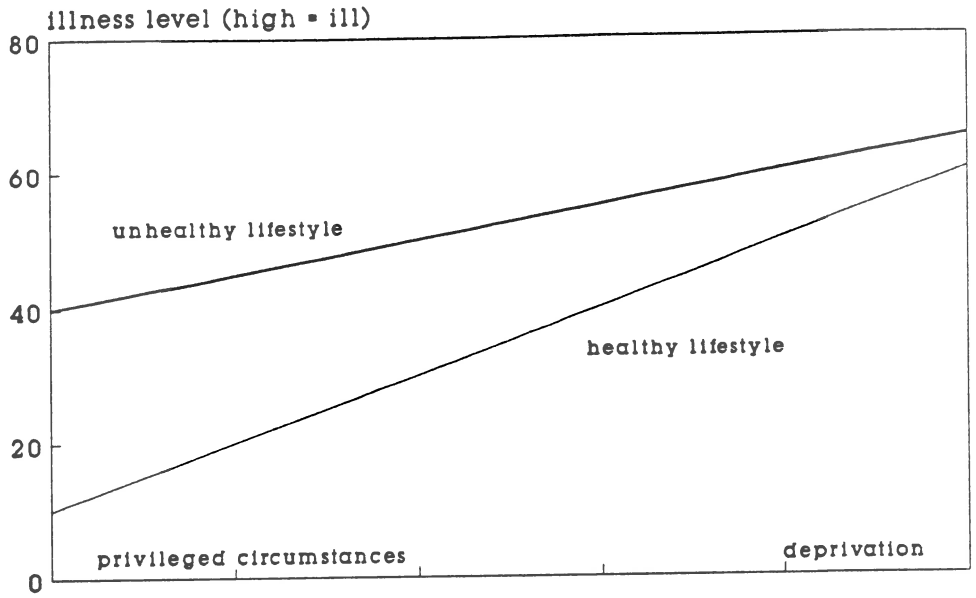


Fig.2a. Subjective health and
circumstances in the Netherlands

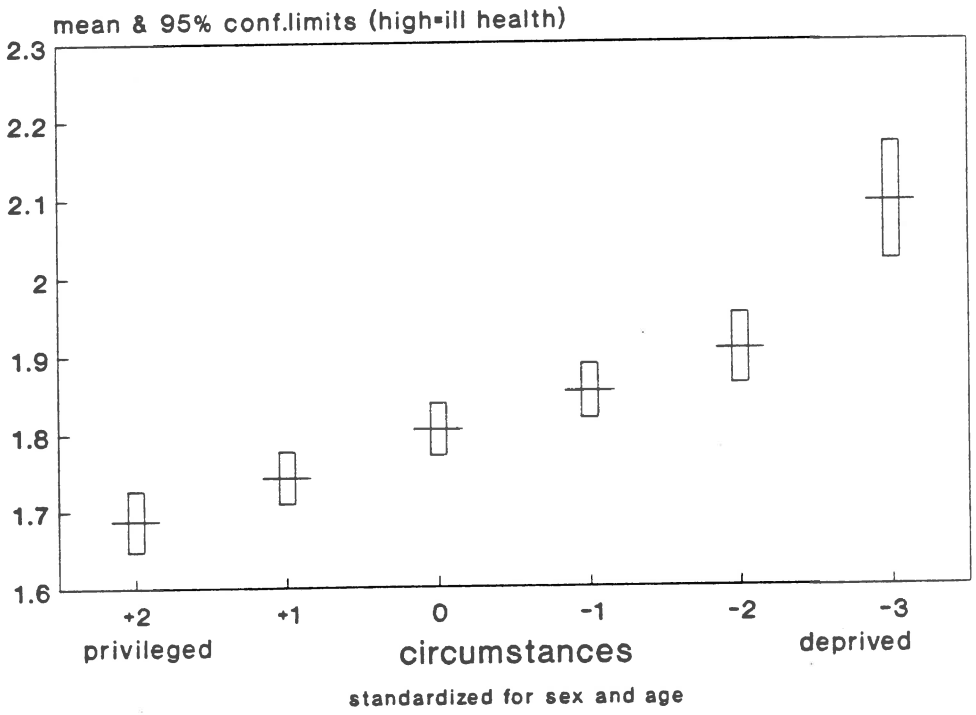
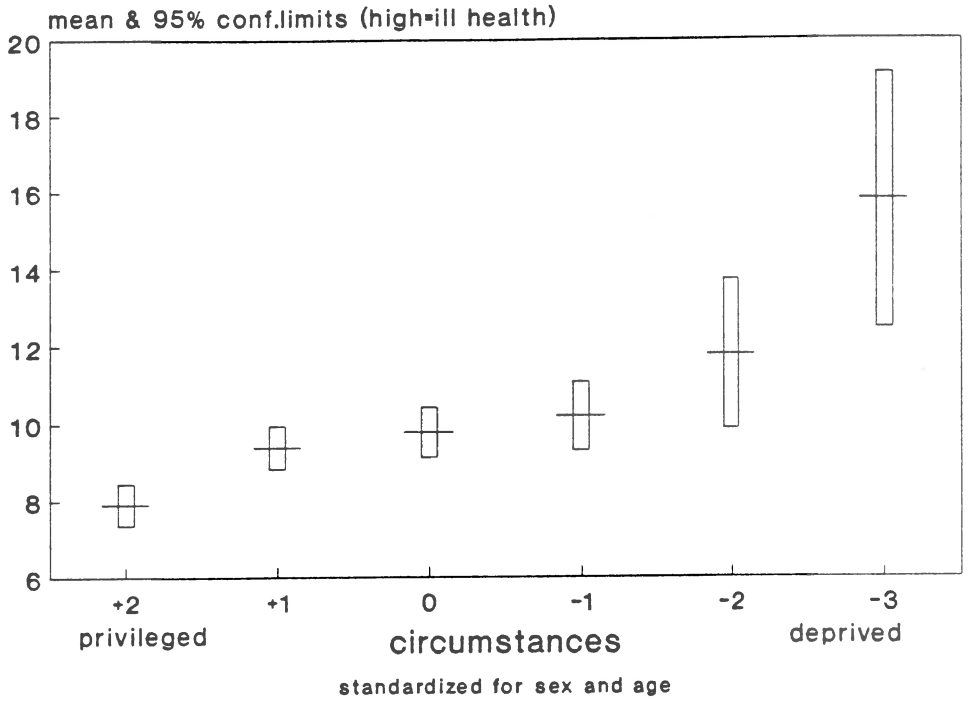
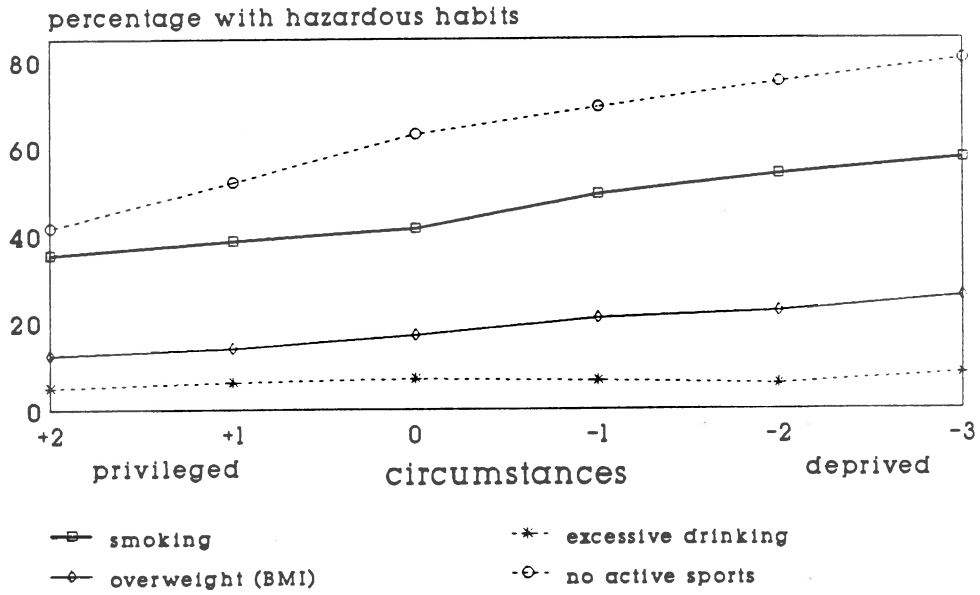


Fig.2.b Current health & circumstances
in Denmark



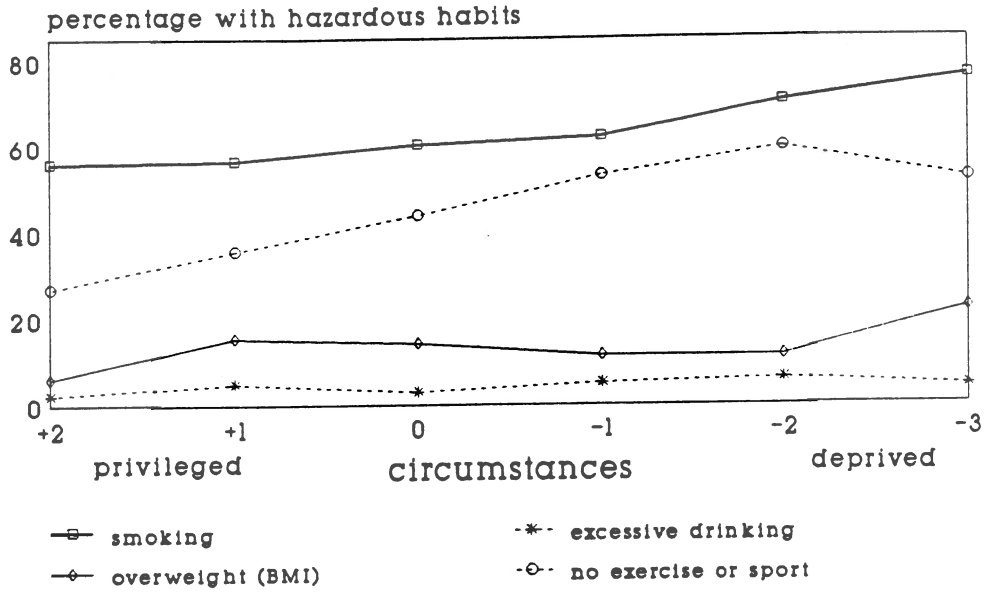
standardized for sex and age

Fig.3.a Risk related health behaviour &
material and social circumstances
in the Netherlands



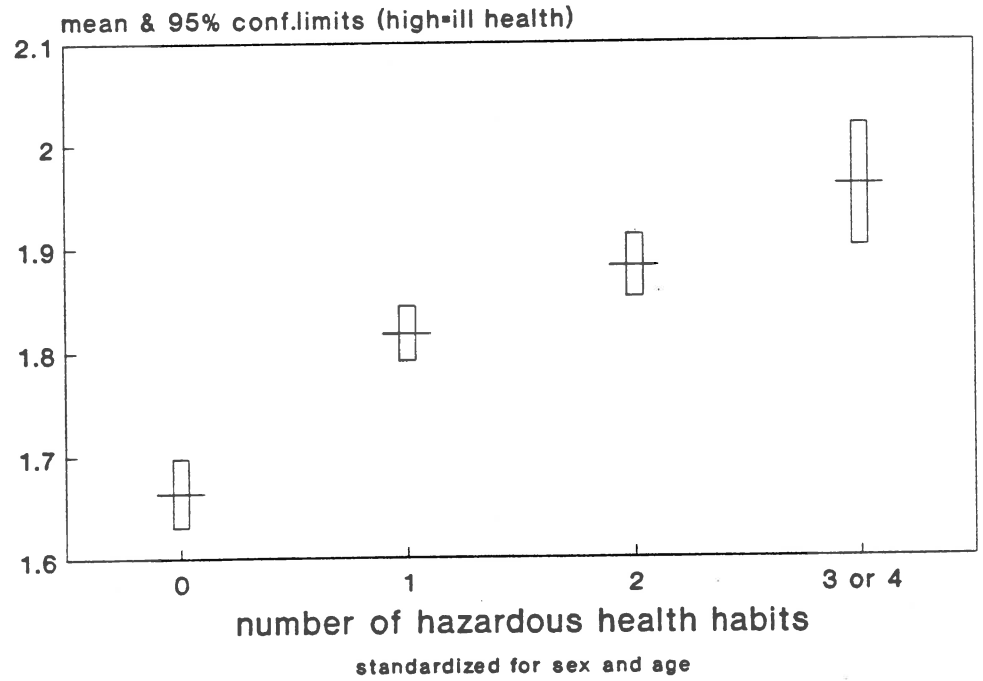
standardized for sex and age

Fig.3.b Risk related health behaviour &
material and social circumstances
in Denmark



standardized for sex and age

Fig.4.a. Subjective health &
hazardous health habits
in the Netherlands



standardized for sex and age

Fig.4.b. Current health &
hazardous health habits
in Denmark

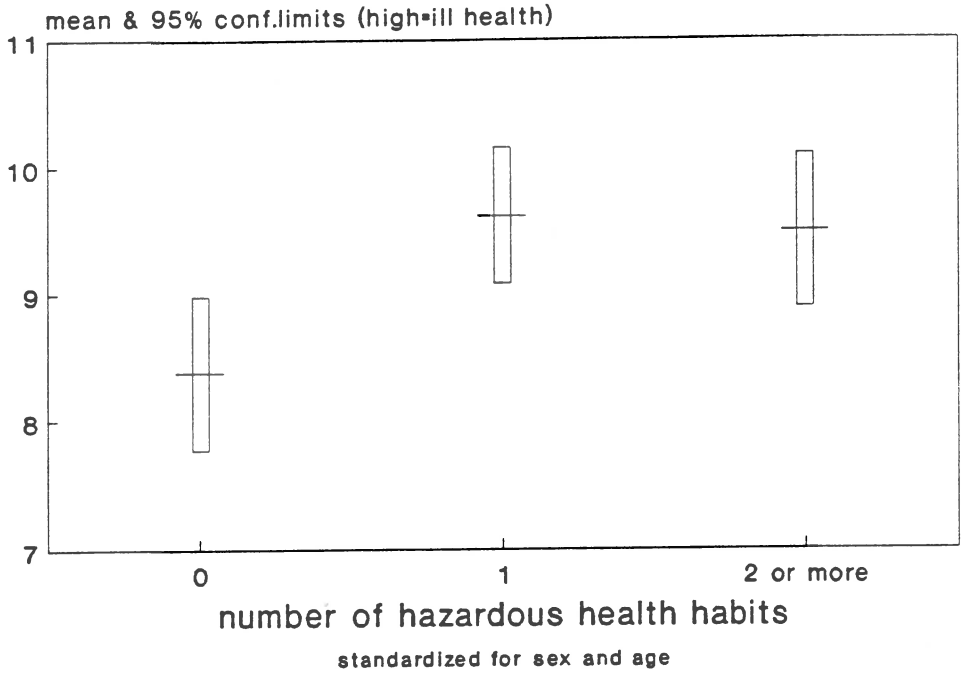
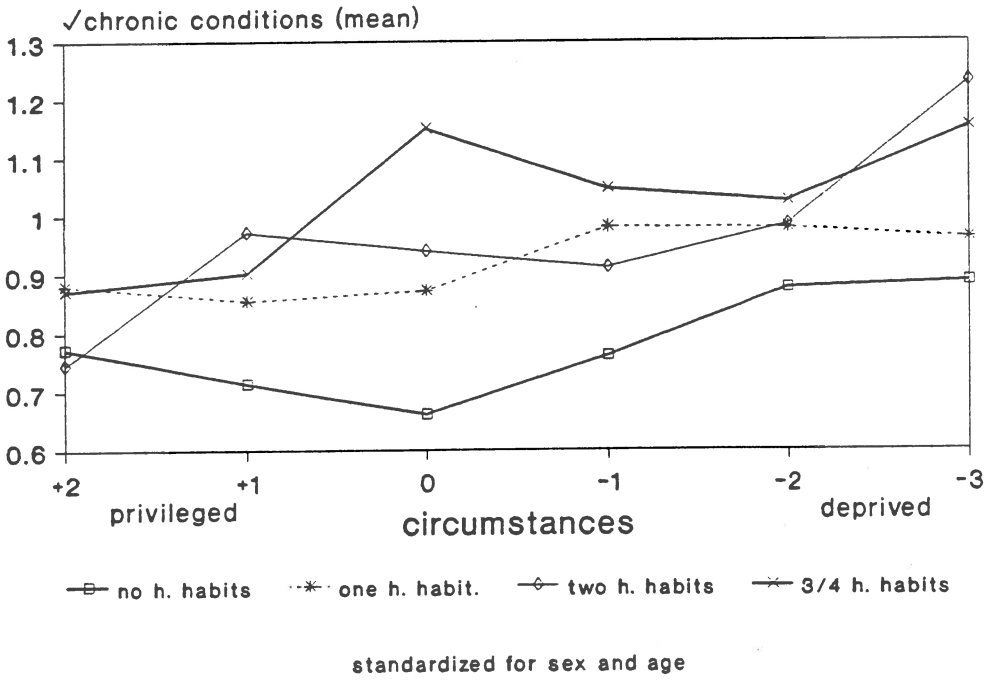


Fig.5. Number of chronic conditions
for circumstances and hazardous health
habits in the Netherlands



Appendix 1. Bivariate relationships between health, circumstances and lifestyle. Dutch data.

Table A1.1. Health and social & material circumstances. Summary table of ANOVAs with indicators of health as response variables and social & material circumstances as predictor, controlling for sex and age (2 groups: 25-44; 45-64 yrs)

Effect	Health n ± 6700	√Complaints n ± 6700	ln (GHQ) n±6700	√Chronic n±6700	√Days ±5800
Urbanisation	m:n.s.	m:**	m:***	m:n.s.	m:n.s.
Social class	m:*** a:*	m:**	m:n.s. a:**	m:**	m:***
Housing tenure	m:*** s:**	m:***	m:*** s:**	m:***	m:*
Health insurance	m:*** a:*** s:**	m:***	m:** s:***	m:***	m:n.s.
Living arrangement	m:** a:** s:**	m:*** s:**	m:*** 3w:*	m:n.s. a:*** s:**	m:**
Daily activities (only maineffect)	m:***	m:***	m:***	m:***	m:*
Friends	m:*	m:***	m:*** a:* s:*	m:n.s.	m:n.s.
Membership vol. org.	m:*** s:**	m:n.s.	m:n.s.	m:n.s. a:*	m:***
Visits	m:**	m:n.s.	m:n.s.	m:n.s. a:*	m:n.s.

Legend: m main effect
a interaction with age
s interaction with sex
3w 3 way effect

F-test
* $p < .05$
** $p < .01$
*** $p < .001$

n.s. not significant (main effect)

Table A1.2. Health and health related behaviour. Summary table of ANOVAs with indicators of health as response variables and health related behaviour as predictor, controlling for sex and age (2 groups 25-44; 45-64 yrs).

Effect	Health n±6700	√Complaints n±6700	Ln(GHQ) n±6700	√Chronic n±6700	√Days n±5800
Smoking m:n.s.		m:***	m:***	m:***	m:n.s.
		s:*	s:***	a:*	
Sport	m:***	m:***	m:*	m:***	m:*
	a:**	a:*		a:*	
	3w:*				
exces. drinking	m:n.s.	m:*	m:n.s.	m:n.s.	m:n.s.
	a:*		a:*		
overweight	m:***	m:***	m:n.s.	m:***	m:n.s.
	s:*	a:*			

Legend: m main effect
a interaction with age
s interaction with sex
3w 3 way effect

F-test
* $p < .05$
** $p < .01$
*** $p < .001$

n.s. not significant (main effect)

Table A1.3. Social & Material circumstances and health related behaviour. Summary tables of crosstabulations with sex and age (2 groups: 25-44 yrs; 45-64 yrs)

	Health related behaviour			
	smoking	excess drinking	sports participation	overweight
Circumstances				
Urbanisation		♂ 25-44** ♀ 25-44*** ♀ 45-64**		♀ 25-44* ♀ 45-64**
Social Class	♂ 25-44*** ♀ 25-44*** ♀ 45-64*	♂ 25-44* ♀ 45-64***	all ***	♂ 45-64* else ***
Housing tenue	♂ 45-64* else ***	♀ 45-64*	♂ 25-44** ♀ 25-64***	♂ 45-64* ♀ 25-64***
Health insurance	♀ 45-64** else ***	♂ 45-64*** ♀ 25-44* ♀ 45-64**	all ***	♂ 45-64* ♀ 25-64***
Living arrangement	♀ 25-44***	♀ 25-44**	♂ 25-44** ♀ 45-64*	♂ 25-44* ♀ 45-64*
Daily activities employement	♂ 25-44* ♂ 45-64**	♂ 25-64*	♀ 25-64**	♂ 25-44*** ♀ 25-64***
Friends	♀ 45-64*		♀ 25-44*	
Membership vol. org.	♂ 25-44* ♀ 25-44** ♀ 45-64*		all ***	♀ 25-44***
Visits			♂ 25-64** ♀ 25-44*** ♀ 45-64**	♂ 25-44*** ♀ 25-44*

Chi² test: * p<.05 ** p<.01 *** p<.001

Artikel 2.

A sociological perspective on the relationship of lifestyle and health, with a case study on smoking and illness.

Auteur:

S.E.Kooiker (NIVEL)

(concept-artikel bestemd voor European Journal of Public Health)

A sociological perspective on the relationship of lifestyle and health, with a case study on smoking and illness.

S.E. Kooiker

From epidemiology to health promotion

It has often been observed that we are presently living in the era of 'diseases of civilization' and that the largest burden of disease is lifestyle related [Hamburg et al, 1982]. Already in 1979 the Surgeon General's report 'Healthy people' stated that in the U.S lifestyle and individual behaviour are a strong if not the major etiologic factor in the 10 major causes of death [Califano, 1979]. Smoking, poor diet, lack of exercise, hazardous sexual behaviour and alcohol and drug abuse are listed as the major risk factors for disease in our times. Epidemiological studies have unravelled the relationship of risk related behaviours to both the increased incidence of disease and to higher levels of mortality. The ascent of epidemiology began in the 1950s with the legendary studies that Doll and Hill carried out on smoking and lung cancer among British doctors [Doll & Hill, 1950]. Their studies were replicated in America and elsewhere around the world. These studies invariably showed a dramatic increase of lung cancer mortality among smokers. Epidemiological studies on the health risks of other lifestyle related behaviours like: alcohol consumption, poor diet and lack of exercise were soon to follow []. The results of these epidemiological studies were used in a number of large scale health promotion campaigns which started during the 1970s. These campaigns have certainly increased the public awareness of behavioral health risks and have also lead to changes in behaviour. In the Netherlands for example, there has been a steady decline in the number of people who smoke, in particular among males: while in 1958 around 90% of the male population between 15 and 65 years were smokers, in 1991 this rate has dropped to 38% []'. In most western countries a similar decline in the number of smokers has occurred [Pierce, 1989].

The critics of epidemiology

Over the years, epidemiologists have been constantly expanding their search for new risk factors of individual behaviour or the natural environment. Currently epidemiologists study various kinds of passive exposures, like low frequency electromagnetic fields from high tension cables or electrical blankets. This search for behaviourial risks has not been without criticism. It is argued that these recent studies contribute relatively little to the improvement of the public health an are mainly a result of the .. *'high prevalence of epidemiologists when the incidence of problems soluble by epidemiological methods is low'* [Skrabanek, 1992]. Recently, a medical sociologists has argued that the alliance between epidemiologists, health promotion campaigners and the mass media is largely responsible for publishing tentative research findings prematurely as established facts, which induces unnecessary worry and guilt among the public, while at the same time the health benefits of altering health habits are often exaggerated [Becker, 1993].

This paper is an attempt to extend Becker's argument and delineate a sociological perspective on 'lifestyle & health' by pointing out how sociology differs from and complements the epidemiological/health promotion point of view. This theoretical argument is followed by a practical application of the sociological perspective on the relationship of smoking and illness.

A sociological perspective on Lifestyle and health

A sociological viewpoint on health and lifestyle would differ in at least three ways from the epidemiological/health promotion perspective. Sociologists would argue that:

1. Lifestyle is more than a set of risk factors
2. Someone's position within society is a least as important to someone's health as individual behaviour.
3. There is a distinction between disease and illness.

The first and the second argument are brought forward to stress the sociological perspective on health and lifestyle, and are complementing the view of epidemiologists and health promotion advocates. The third argument points at the difference in the object of study. Epidemiologists study the occurrence of disease while sociologists study the occurrence and effects of illness, stressing the subjective experience of illness from the viewpoint of those who suffer from it. Let us examine each of these arguments more closely.

Risk factors and lifestyle

In their assessments of behaviourial risks, epidemiologists generally single out individual aspects of behaviour, while controlling for other 'confounding' factors. They aim at uncovering the mathematical relationships of exposition to a certain disease causing agent (e.g. tar or nicotine in cigarette smoke) and the occurrence of disease or increased mortality. The ultimate goal of epidemiology, as in any other science, is to show that this relationship is a causal one. Causality however, is difficult to establish in this type of research that largely precludes experiments on humans. Fierce debates have for instance been held about cause and effect in the relationship of smoking and lung cancer, which is particularly noteworthy because the association of smoking and the incidence of lung-cancer itself is undisputed (see the recent discussion in the special section in the American Journal of Epidemiology, vol 133, 416-436).

Sociologists view lifestyle differently. To begin with, they do not necessarily associate 'lifestyle' with health related behaviour. To them lifestyle means a set of expressive observable behaviours (Sobel, 1981). The term lifestyle was originally coined by Max Weber who used it to distinguish social classes from status groups. In his famous essay on classes, status groups and parties, Weber pointed out that social classes originate in the production and accumulation of goods and wealth [Weber, 1972]. Status groups on the other hand are groups who share the same prestige which is expressed in their lifestyle. Cokerham et al. argue that classes are based on the means of production in society whereas status groups are based on consumption [Cockerham et al, 1986]. Sociological studies of lifestyle have always emphasized patterns of behaviour rather then single risk factors. They have shown that health related behaviour (like smoking or drinking) is embedded in a pattern of consumption and leisure time activities that include behaviour that has no direct bearing on health [Ganzeboom, 1988]. It may well be that the actual pattern of a specific combination is much more salient to someone's health than the sum of the single risk factors. Alternatively, what epidemiologists call 'risks factors' could often be considered as indicators of a style of daily conduct rather then behaviours that involve exposing the body to disease causing agents. An example can illustrate this point. The Alameda country study, carried out in the 1960s and 1970s shows very well how a particular pattern of

behaviour is related with health. The researchers from the Human Population Laboratory demonstrated the beneficial health effect of seven good 'practices'. Besides refraining from smoking, moderate drinking and physical exercise, these practices include 'eating breakfast daily' , 'rarely eating between meals' and 'sleeping seven or eight hours daily' . All of these practices were related to both a lower mortality and to a better self perceived health [Belloc & Breslow, 1972; Belloc, 1973]. The latter three are indicators of a restrained and disciplined mode of living and can hardly be considered as an enumeration of a set of risks factors, containing hidden disease causing agents, to which some are more exposed than others. The Alameda County study shows that there is more to the association of lifestyle and health than the simple 'risk factor' model will have us believe.

Social position, lifestyle and health.

An increasing number of studies, in various parts of the western world, have shown that a disadvantaged social position invariably comes with a poorer health and higher mortality rates [Fox, 1989 and a recent review: Feinstein, 1993]. With the term 'social position' we refer to various characteristics like employment status, educational attainment, social class, living arrangement etc. Other studies have shown that a disadvantaged social position is also associated with higher levels of risk related behaviour like smoking (but not alcohol consumption), poor diet and lack of exercise, but also circumstances like unsafe working conditions [Blaxter, 1990; Mackenbach, 1991]. These voluntary and involuntary factors may constitute part of the explanation of socio-economic differences in health. Few studies relate both social position and behaviour to mortality. These studies however, find large independent effects of both behaviour and social position. Feldman et al. report Relative Risks (RR) of death from Heart Disease from a cohort of American men and women [Feldman et al, 1989]. The RR of limited education among males age 45-64 (2.27) is even slightly larger than the RR of smoking (2.21), in other cases the RR of smoking is somewhat larger. The association of social position and health exists independent of the differential distribution of risk related behaviour among the population. Now, although there is a clear relationship between social position and health, it is not easy and in many cases even impossible to pinpoint a risk factor and the disease causing agent. Yet, with or without risk factor, it seems that our conclusion could be that providing education, jobs, career opportunities and social security for the disadvantaged have large beneficial effects on public health. These benefits exists independent of changes in lifestyle and, concurring with Becker, are probably more lasting than the numerous health promotion campaigns that aim at the individual, his/or her sense of guilt and ability and willingness to change[2].

Disease and Illness

The third area where sociologists differ from epidemiologists is that sociologist make a clear distinction between disease and illness. Freidson and others have argued that disease relates to alterations in the biological functioning, which exists independent of human evaluation, whereas illness refers to the individual appraisal of bodily symptoms and the meaning that the individual attaches to these symptoms [Freidson, 1970; Morgan, Calnan, Manning, 1985]. The experiences of illness does not necessarily coincide with diagnosed disease. People may have a disease but otherwise symptom free. Others may have symptoms, although physicians are unable to find a disease. The sociological

definition of illness has led to the construction of a whole series of health status indicators aiming in particular at the social effects that illnesses have on the individual and his or her social environment [Bowling, 1991]. Most sociological, psychological and economic studies nowadays use a variety of these aggregate or composite indicators and relate these to variables of interest like health behaviour, social class, income, accessibility to health services and so forth. The individual experience of particular symptoms of ill health has however not received much attention from social scientists, probably due to the widespread use of the standardized instruments. Consequently, very little is known about the relationship of lifestyle (in either the broad sociological or the narrow health related conceptualisation) and illness, defined as the experience of symptoms from the laymen's perspective. The study of this relationship can however provide valuable information. Illness, alongside with disease, is an important part of whatever definition of health or quality of life that we employ [Blaxter, 1990]. Why should we only be interested in the increased risk of disease that comes with hazardous health habits? The increased risk of illness should be important as well. Not only to the individual, who might like to know what symptoms come with pursuing or avoiding a certain lifestyle, but also in terms of public health. Numerous studies have shown that the illness experience ("what symptoms do I have and how serious do I find them") propels people to seek care. People working in health promotion might be interested to know how the experiences of symptoms changes when people alter their lifestyle (e.g. give up smoking).

A case study on smoking behaviour and illness

In the empirical part of our paper we examine the relationship between smoking behaviour and the experience of symptoms of ill health. We have chosen smoking as an example because it is a well know risk factor of which the relationships with the occurrence of disease are thoroughly studied. In an earlier paper we have shown how smoking behaviour is related to various aggregated indicators of health (Kooiker et. al, 1993a). We found that smokers rate their health to be poorer than non-smokers do. Smoker also report more acute symptoms, but not more chronic conditions, and are more likely to suffer from depression or other non-psychotic mental illness, as judged with Goldberg's General Health Questionnaire. In the present paper we focus on the nature of the symptoms that come with smoking and contrast them with the symptom experience of those who have never smoked or have given up smoking.

Our study of the relationship starts with examining bivariately how smoking and symptoms of ill health are related. Our analysis is based on a health survey which was carried out as part of a larger study on the position and functioning of General Practice in the Netherlands [Foets et al, 1992]. The survey contains two instruments to assess symptoms. During the interview the respondents were asked to complete a checklist on common symptoms of ill health. In addition they were asked to record the occurrence of health problems in their own words in a health diary which they were asked to keep for a period of three weeks. The purpose of exploring the bivariate relationships is to show what kind of symptoms smokers, previous smokers and non-smokers typically experience in their daily life.

It is obvious that the report on bivariate relationships needs some refinement. Smokers may experience more symptoms of ill health than non-smokers, but can these symptoms be rightfully

attributed to smoking? Other variables like those describing social position may in fact be responsible. In a statistical analysis, 'holding constant' for social class, education, living arrangement, and other aspects of risk related behaviour may help to clarify the relationship of smoking and symptoms. The multivariate analysis can tell us which kind of symptoms are 'genuinely' associated with smoking behaviour irrespective of other aspects of lifestyle, social class etc.

What are good candidates for an elaboration of the association of smoking behaviour and symptoms? In the context of our discussion on a sociological perspective on health and illness it seems obvious to include variables that relate to the social environment rather than the variables relating to the natural environment, individual (genetic) dispositions, congenial or long standing chronic diseases etc.

Social class is an obvious candidate to include in our analysis. Class related health differences have been reported in a number of studies from various European countries, as are class related differences in health behaviour and lifestyle [Fox, 1989; Blaxter, 1990].

In the Netherlands, a number of studies have used level of education as an indicator of socio-economic status, since a research tradition based on social class is lacking in this country. Educational level is an appropriate candidate for inclusion in our analysis because several studies have shown that education is related both to health differences and to health habits, with a better health and healthier behaviour among those with a higher education [Mackenbach, 1991]

Social integration is a third element of social position that should be included in our analysis. It has been shown that higher levels of social integration, even when simply indicated with marital status, lead to lower mortality and are associated with better health practices [Umberson, 1987]. Another element of social position is the employment status of the individual. In the Netherlands the number of people who are not regularly employed is exceptionally high in comparison with other welfare states [Eurostat, 1991]. While unemployment figures are similar to other countries, the percentage of the population on a disability pension is much higher. Another study, that uses the same data, has shown that the unemployed and people on a disability pension are in poorer health than those who work or enroled in full-time education [Bensing et al, 1991]. Our previous study also showed that health practices are better in the latter categories [Kooiker et al, 1993a]. We do not include household income in our analysis. Although income is an important aspects of one's social position, the analysis of income data from survey's is fraught with difficulties. Many respondents refuse to answer that question or misrepresent their income. It is also difficult to compare income between households of different sizes.

The elaboration of the relationship between smoking behaviour and symptoms of illness would not be complete without including other aspects of lifestyle or health behaviour as well. A secondary analysis poses limitation on the variables to are included in the analysis. Our data do allow us to account for drinking habits, exercise (sports participation) and overweight as a proxy of dietary habits. Finally, our model includes religious participation, which is both an indicator of lifestyle and of social integration. Active church go-ers have a better health than those who do not and at the same time have better health practices [Schiller, Levin, 1988].

Our secondary analysis is bases on two measurements of symptoms: structured health diaries and a symptoms checklist. Elsewhere we have elaborated the advantages and disadvantages of both instruments in some more detail [Kooiker, forthcoming]. Health interviews with a checklist have the advantage of easy administering and do not demand high levels of cooperation from the respondent. A disadvantage is that the conditions on the checklist do not necessary reflect the actual illness experience of the respondent. The health diaries use open-ended questions, which allow more say of the respondent to frame a symptom in his or her own words. They do however require more work from the respondent, like completing the diaries each day and answering additional questions about the symptoms that are reported. An analysis of the answering patterns for both instruments revealed that the best results with the diaries were obtained with respondents who have attained a higher level of education and are sufficiently motivated to comply with the study, which was indicated by expressing an interest in health matters. Respondents with little interest in health matters or those who received only limited education responded less well to the diary as compared to the questionnaire. Our analysis of smoking and symptoms should take these results into account. Our model does already include 'level of education' as a control variable. It is therefore suggested to control for the expressed interest in health matters as well.

Material and methods

Our study consists of a secondary analysis of data from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 surgeries using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables. A random sample of 100 patients of each General Practitioner was approached for a health interview. It should be noted that almost the entire Dutch population is listed with a GP, which makes the GP's list a suitable sampling frame. The patients were approached with a letter from their GP at their home address. The sample was not limited to patients who had recently visited the surgery or are currently undergoing treatment; also patients who had not seen their GP for a long time were approached. At the end of the interview, the respondents were asked to keep a structured health diary on the daily occurrence of health complaints and illness behaviour for the following three weeks. The short interval between those two measurements allow us to assume that the health status of the respondents has not changed dramatically. The interviewer made an appointment to collect the diary with respondents who agreed to take part in the diary study. During the diary keeping period the interviewer phoned twice to check if there were any problems with the completion of the health diary. The interviewers also checked the entries of the respondents when collecting the diaries. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (Total N = 11038; all ages). The age and sex distribution of the actual respondents differs only slightly from the Dutch population. There are weights for the stratifying variables that are applied when a specific analysis should be considered representative for the population as a whole.

The health status of the respondents was assessed in several ways in our study. During the interview respondents were asked to complete a number of checklists on their health status, with one list for acute symptoms. It should be noted that these checklists were presented before the respondents were asked about their smoking habits. The list with acute symptoms contained 42 precoded items and 3 open-ended items for additional complaints. The respondents were asked to indicate for each

item if they experienced that symptom/condition during the previous fortnight. The checklist was not specifically designed for this study but adapted from an older checklist that was used in two previous studies [Van Sonsbeek, 1990]. With 42 different symptoms, the checklist contains too many categories for a concise presentation of the relationship between health complaints and lifestyle. We therefore decided to group complaints in 11 relatively large categories (listed in Appendix.1).

The occurrence of symptoms of ill health was also assessed with a health diary that the respondents were asked to keep for three weeks. The health diary consists of a 21 paged booklet with a simple one-page questionnaire to be completed each day. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two), followed by a series of precoded questions on the assessment of the complaint and the illness action prompted by the complaint on that day. The lay-out of the diary was also based on earlier studies. In particular Verbrugge's review of previous diary studies and her own diary study should be mentioned [Verbrugge, 1980; Verbrugge, 1985]. The actual questions in the health diary were taken from an earlier Dutch study which was carried out by a General Practitioner in four practices [Van de Lisdonk, 1985].

In a previous analysis of the response on the health diary study, the level of cooperation was compared among respondents. With (full) cooperation we mean that respondents agreed to take part in the diary study and returned it to the interviewer after three weeks with entries about their health for each day. Almost 85 % of the respondents to the survey completed the diary for the entire period. The analysis showed that the level of cooperation (defined as not keeping the dairy, keeping the diary for one day, two days etc.) was significantly lower among the elderly, respondents in poor health, among those with either a very low or a very high level of education and among respondents who did show indifference towards health matters during the health interview. The statistical analysis of the occurrence of health complaints in this paper are based on these complete records.

The diary contained two open-ended questions on the nature of the symptoms of ill health and a coding system needed to be developed. The health complaints of the diary were coded in 97 categories along the lines of the ICPC chapters [Lamberts & Woods, 1987]. This coding system was also used in the questionnaire part of our study to assess the respondent's reason for encounter with a General Practitioner. These two digit categories system still contained too many categories that were reported by only very few respondents. The larger categories were therefore again grouped in 18 groups, which were previously used in the Nijmegen Area Study which also used open-ended questions to assess the occurrence of common health complaints (ref. Appendix 1) [Furer & Tax, 1987].

The health interview provided the information on variables like sex, age, education, social class, living arrangement and the different aspects of health related behaviour (ref. Appendix 1 for a complete list of variables). Social Class is defined according to the classification of Goldthorpe et al. in manual, non-manual and farmer/self-employed with subdivisions for manual and non-manual. Social integration is indicated with the composition of the household instead of marital status. Unmarried but cohabiting couples resemble married ones rather than single living individuals in terms of social integration. In our analyses education is a simple categorical variable distinguishing: lower,

intermediate and higher education.

Religious attendance is an important aspect of both social integration and lifestyle. In this study we combine religious affiliation in the past and present, irrespective of a particular domination, with the frequency of church attendance, in a single nominal variable.

During the interview the respondents were also asked about their current and previous alcohol and tobacco consumption. We distinguish three levels of drinking: abstainers, light or moderate drinkers and excessive drinking. There were only very few abstainers who reported heavy drinking in the past. We therefore did not account for previous drinking habits. For smoking habits we distinguished former and current smokers (light, moderate and heavy smokers according to the number of cigarettes, cigars or pipes that are smoked daily) and respondents who have never smoked. Former smokers were subdivided in those who quit 5 years ago or less and those who quit more than 5 years ago. It may be expected that those who quit more than five years ago resemble life time non-smokers and experience relatively few health complaints, whereas those who quit more recently are probably experiencing more complaints [Blaxter, 1990]. Our respondents were not directly asked about their diet but instead asked about their length and weight with which the Body Mass Index (BMI) can be established. In our analyses the BMI has to serve as a proxy to dietary habits. The respondents were also asked if they actively engage in sports or not. We considered no engagement as an indicator of a sedentary lifestyle. Our data do not allow us to include other types of (leisure time) exercise.

Statistical Analysis

The data from the questionnaire and the health diary allow for an overview of the health problems that individuals commonly experience. It also shows how questionnaire and diary differ in the response that these instruments elicit. The analysis therefore started with simple tabulations of complaints for three different age groups (adolescents, adults and the elderly). The tables show the occurrence of symptoms in a period of 14 days, the reference period that allows for comparison with other studies (see Appendix 2.).

The purpose of our case study is to show how smoking behaviour is related to the occurrence of symptoms of ill health. The simple model relates smoking behaviour to the reporting of complaints during the interview and in the health diaries. We used logistic regression to show how a particular category of behaviour increases or decreases the probability of experiencing (or better: reporting) of certain health complaints. For the diaries the dependent variable consists of the occurrence (or non-occurrence) of complaints in 21 days,using the entire time span of the diary study, whereas the checklist uses 14 days as a reference period. The analysis were carried out for men and women separately, controlling for age. The association between the variables of interest is expressed with odds-ratio's.

The second analysis uses a model with more predictor variables that take social position, lifestyle and response behaviour into account. It also uses logistic regression. The association of both health behaviour and social position with illness is very likely to be most pronounced for adults. In younger age groups the effects of behaviour or social position are likely not to have taken effect, while also

differences in social position are less pronounced [Blaxter, 1990; Feinstein, 1993]. Among the elderly differences in social position are reduced and the 'healthy survivor' effect diminishes health differences at later ages. For this reason, the analyses of smoking behaviour and health were carried out with data from respondents between 25 and 65 years of age.

The large number of dependent variables demands a summarized presentation of the results of the analyses. In the following tables only the estimated odds-ratios are presented.

Results

The data from the health interview and the health diaries confirm the notion that health problems are very common in the population. In another analysis with these data we found that 80 % of the respondents to the survey reported at least one health problem in the previous two weeks. The respondents who kept the health diary, reported a lower percentage: 63 % had recorded one or more days with health problems in the first two weeks of the diary keeping period [Kooiker, forthcoming]. In this analysis we report on the nature of the symptoms that people often experience.

The following tables show the occurrence of health complaints in a period of 14 days for both checklist and diary data. The data are weighted to represent the Dutch population. The combined groups of symptoms in the checklist disclose some interesting patterns.

Table 1.

Psychological and musculoskeletal symptoms, common cold or flu and headache are all among the most frequently occurring symptoms in the population of 15 years and over. Headaches and symptoms of common cold are more found among the younger age categories than among the elderly. The elderly on the other hand mention more musculo-skeletal and cardio-vascular complaints and hearing problems. Women have a greater likelihood of experiencing health complaints than men, with particular large differences for urinary complaints (irrespective of menstrual problems), complaints related to the digestive tract and weight problems. The following table shows the health problems as they were recorded in the health diary. The coding system differed from the checklist, precluding an exact comparison.

Table 2.

What we can observe is that the probability of reporting health complaints is markedly lower in the diaries. Also the differences between the age groups are less pronounced. An examination of the most frequently occurring symptoms shows some similarities with the checklist. Headache, fatigue and musculo-skeletal complaints are among the most frequently mentioned. Women mention

complaints more often than men, in particular fatigue, headache and bowel symptoms. It is striking that very few respondents record psychological or psychiatric symptoms on their own accord, although the instruction with the diary explicitly mention to record those symptoms. The results that are obtained with both instruments were compared with similar studies from the Netherlands. This comparison is described separately in appendix 2.

The main topic of our case study is the relationship between smoking behaviour and the occurrence of symptoms. This relationship was first examined bivariately after which a number of control variables were inserted. The analyses were carried out for respondents in the age range 25-65 years only. The two following tables show the bivariate associations as they were obtained with logistic regression. These regressions were carried out for men and women separately, with age as a (numerical) control variable.

Table 3.

The table shows that women reported more symptoms that were associated with their smoking behaviour than men did. Among men only heavy smokers and those who quit smoking reported more (or less in one case) symptoms than others. For women the pattern of symptoms that come with smoking behaviour is quite clear. Those who quit recently or a few years ago have more symptoms than those who either never smoked or quit a long time ago. With an increasing number of cigarettes the number symptoms increases as well. The type of symptoms that are associated with smoking behaviour differs between the sexes: among men only musculoskeletal problems occur twice in the list as problems that previous and current smokers experience more often. Women mention those complaints too, but they also mention psychological problems and problems of the digestive tract. The odds-ratio's are in general not very large with an average about 1.5, meaning that the probability of having symptoms is about 50% higher than in the reference category of non-smokers.

An entirely different picture emerges when we take a look at the results that are obtained with the health diaries.

Table 4.

Moderate and heavy smokers do no longer report more symptoms but instead report less, in particular men. Respondents who quit smoking are more likely to report symptoms than never-smokers do, but only few symptoms overlap with the interview data. Again female former smokers are more likely to mention psychological symptoms than male former smokers, which is in agreement with the interview data. For the diaries the odds-ratio's are larger than those of the questionnaire data[3].

The next step in our analysis is to take account of the social position of the respondent, his or her

other health habits and readiness to report symptoms as indicated with taking and interest in health matters. The logistic regressions that were carried out with those variables entered alongside smoking habits, led to some different associations of smoking behaviour and illness, that are presented below. The next table shows the results for the interview data.

Table 5.

There are fewer significant associations than in the bivariate model in particular among heavy smokers. There are some associations that remain constant. For men, musculoskeletal symptoms still occur more often among former and heavy smokers, while for women, psychological and digestive symptoms are still more frequent among those who currently smoke or those who quit less than five years ago. Men who are only light smokers, report less headaches. The equivalent of this table with the diary data shows a pattern of very little change with the bivariate analysis.

Table 6.

For men, back problems occur more among former smokers (who stopped smoking more than five years ago) than among those who never smoked irrespective of social class, employment status etc. Again men who smoke 10 cigarettes or less in a day report less headaches.

Discussion

The most striking feature of our data is that the health diaries and the questionnaire lead to very different results as to the relationship of smoking behaviour and the occurrence of symptoms. Our impression of this relationship would have been rather different when either one of these data would have been used without the other. These differences between instruments are much larger than the differences that occur when the bivariate analysis is extended to a multivariate one. We have to know more about the meaning of these differences before we can draw conclusions about the relationships of smoking behaviour, social position and the occurrence of symptoms.

When is an individual ready to frame a physical sensation as a symptom? Our data show, that the answer to that question not only depends on the individual but also on how the question is asked. It is plausible that heavy smokers regularly experience physical sensations that come with their habit. But, are these symptoms abnormal to them and deviant enough to be mentioned in a dairy? Probably not. In another paper we pointed out that cognitive dissonance may be at work here. The health diaries, which were also used in that study, showed that smokers talk significantly less about their symptoms than others do. Smokers may have a tendency to ignore the sensations that come with their habit. But why is it then that smokers acknowledge their symptoms, when queried about them during the interview? This is probably so for two reasons: (1) the questionnaire takes comparatively little effort to answer and (2) the items on the checklist serve as a memory-aid that draws attention to symptoms,

that would otherwise have been forgotten. In the methodological paper we have shown that this applies not only to smokers but to the chronically ill as well. They too may experience symptoms that are part of their daily routine and as such not different enough to be written down in the diary. This answering pattern applies of course only to the specific symptoms that are mentioned in the checklist. The methodological paper showed that the items of our checklist are biased towards psychological complaints, which is due to manner in which previous users have mainly used the list, namely to assess (psychological) distress. This bias is absent from the diaries, but they suffer probably from social desirability in the opposite direction: mentioning physical rather than psychological complaints. When it is true that smoking is in particular associated with psychological complaints, than the differences between instruments are enlarged. The main conclusion of the empirical part of our paper must be that sociological studies of lifestyle, social position and illness should at first be dedicated to developing an instrument for the unbiased assessment of symptoms.

Notes

1. The percentage of female smokers has risen in the period between 1960 and 1968. During the 1970s and 1980s the percentage of female smokers has declined but less dramatic then among males. In the 1991 the percentage of smokers has risen among both males and females. It is too early to tell if there is a actual trend in the opposite direction.

2. The scope of these programmes is limited since for instance 90% of the people who try to quit smoking do so without a formal cessation programme [Hamburg, 1982].

3. The large odds-ratio's for smoking and having less urinary complaints for men are based on very small numbers.

Table 1. **The occurence of health complaints in a period of 14 days, recorded with a checklist during the health interview. Percentages in three age categories *)**

	♂			♀		
Complaint group	15-24 y	25-64 y	65 +	15-24 y	25-64 y	65 +
1. Headache/dizziness	30.4	27.9	18.6	55.8	44.2	31.4
2. Psychological	41.4	43.1	44.3	55.4	58.2	65.3
3. Cold/flu	45.4	30.6	30.3	52.3	31.5	22.8
4. Digestive	6.5	4.8	5.2	17.0	11.3	9.5
5. Cardio-vascular	8.6	14.7	24.1	11.4	17.6	24.7
6. Musculo-skeletal	25.9	36.6	41.5	28.7	44.2	53.8
7. Bowel	7.9	9.2	11.3	22.7	19.2	20.4
8. Stomach	5.8	10.7	12.0	7.1	11.6	13.0
9. Weight problems	3.7	5.7	9.4	6.9	13.8	26.9
10. Urinary **)	1.3	1.6	6.7	18.4	15.5	12.0
11. Ear/hearing	9.0	12.9	29.7	11.2	14.8	29.4
Number of respondents	1135	3406	643	1088	3335	964

*) Data from the Dutch National Survey of General Practice. Symptoms on the checklist are grouped in 11 categories (weighted to represent the Dutch population)

**) Including menstrual problems for women

Table 2. **The occurence of health complaints in a period of 14 days as recorded in health diaries. Percentages in three age categories *)**

	♂			♀		
Complaint group	15-24 y	25-64 y	65 +	15-24 y	25-64 y	65 +
1. Common cold/flu	10.3	9.6	5.2	15.3	10.9	7.0
2. Headache/migraine	17.9	16.0	8.4	33.8	28.9	13.9
3. Musculo-skeletal (ex. 4)	11.6	12.2	10.7	10.8	16.1	19.4
4. Back	4.4	7.9	6.8	6.9	10.0	9.7
5. Stomach	2.8	3.8	3.6	9.4	5.4	4.4
6. Skin	1.5	1.4	3.0	2.6	2.4	1.6
7. Urinary/genital	0.0	0.9	0.4	6.6	6.0	2.2
8. Cardio-vascular	1.6	3.2	5.5	0.6	2.8	5.8
9. Digestive system (ex. 5,10)	0.5	0.1	0.5	0.5	0.4	0.2
10. Bowel/intestines	4.2	3.4	3.2	14.0	9.9	3.5
11. Skin (wounds etc.)	0.2	0.2	0.0	0.1	0.2	0.0
12. Psych-ological/-iatric	0.4	0.8	0.2	1.0	1.5	0.9
13. Tooth-ache	2.3	1.4	0.6	2.4	0.9	0.4
14. Fatigue	8.7	12.2	7.9	19.5	22.4	18.0
15. Eye/ear	1.5	1.6	1.2	2.5	2.3	4.0
16. Respiratory (ex. 1)	8.8	6.8	7.3	11.1	9.1	7.6
17. Centr. Nerv. system	0.5	1.2	1.3	3.6	2.3	3.2
18. General	1.4	1.0	0.6	1.8	1.0	1.5
19. Blood	0.2	0.1	0.0	0.3	0.2	0.3
20. Rest	2.4	2.7	4.3	4.0	3.7	5.0
Number of respondents	937	2867	482	934	2802	655

*) Data from the Dutch National Survey of General Practice. Only complete records for the entire diary keeping period are used. (N=8677)
Respondents were asked to describe their health complaints, with a maximim of two, in their own words. The complaints are grouped in broad categories which were previously used in a health survey in the Nijmegen area to categorize open-ended questions (Furer & Tax, 1987) .

Table 3. The association of smoking behaviour with the recording of symptoms on a checklist during a health interview (controlling for age). Association as odds-ratio's (reference category:non-smokers). Data from Dutch National Survey of General Practice (ages 25-64 yrs N=6569)

	Behaviour and signific. more complaints (p <.05)				Behaviour and significantly less complaints (p <.05)			
Health related behaviour	Sex	Complaint	Odds-ratio	Sig.	Sex	Complaint	Odds-ratio	Sig.
former smokers (quit > 5 years)	♂	musculoskel.	1.28	.042	♂	cold etc.	1.42	.008
	♀	musculoskel.	1.33	.010				
former smokers (quit ≤ 5 years)	♂	cardiovasc.	1.52	.032				
	♂	stomach	1.70	.010				
	♀	psychological	1.38	.013				
	♀	musculoskel.	1.37	.015				
	♀	bowel	1.37	.049				
	♀	stomach	1.70	.006				
	♀	weight probl.	1.81	.000				
light smokers (<10c/d)	♀	psychological	1.31	.016				
	♀	cardiovasc.	1.35	.046				
	♀	stomach	1.47	.027				
mod. smokers (11-20 c/d)	♀	psychological	1.48	.001				
	♀	cold etc.	1.31	.022				
	♀	musculoskel.	1.28	.033				
	♀	bowel	1.53	.002				
	♀	stomach	1.65	.003				
	♀	urinary/menstr.	1.53	.003				
heavy smokers (>20 c/d)	♂	psychological	1.35	.013				
	♂	cold etc.	1.37	.012				
	♂	eye/ear	1.54	.016				
	♂	musculoskel.	1.54	.001				
	♀	headache/dizzy.	1.47	.003				
	♀	psychological	1.89	.000				
	♀	cold etc.	1.45	.006				
	♀	digestive	1.53	.030				
	♀	musculoskel.	1.51	.002				
	♀	bowel	1.53	.007				
	♀	stomach	1.98	.000				
	♀	urinary/menstr.	1.47	.022				
	♀	cardiovasc.	2.23	.000				

Table 4. **The association of smoking behaviour with the recording of one or more days with symptoms in health diaries, controlling for age. Association as odds-ratio's (reference category: non-smoker). Data from Dutch National Survey of General Practice (ages 25-64 yrs; N=5655).**

	Behaviour and significantly more complaints				Behaviour and significantly less complaints			
Health related behaviour	**Sex**	**Complaint**	**Odds-ratio**	**Sig.**	**Sex**	**Complaint**	**Odds-ratio**	**Sig**
former smokers (quit > 5 years)	♂	skin	2.33	.045	♂	fatigue	1.49	.031
	♂	back	1.71	.010				
	♀	eye/ear	2.41	.013				
fomer smokers (quit ≤ 5 years)	♀	cardiovasc.	2.10	.029				
	♀	psychological	3.71	.009				
	♀	eye/ear	2.27	.038				
light smokers (<10c/d)	♀	psychological	3.56	.006	♂	headache	1.61	.008
	♀	urinary	1.57	.029				
mod. smokers (11-20 c/d)					♂	urinary	6.03	.023
					♂	bowel	2.36	.006
heavy smokers (>20 c/d)					♂	urinary	9.09	.037
					♂	fatigue	1.51	.032
					♀	respiratory	1.78	.027

Table 5. **The association of smoking behaviour with the recording of symptoms on a checklist during a health interview, after controlling for social position and lifestyle. Association as odds-ratio's (reference category:non-smokers). Data from Dutch National Survey of General Practice (ages 25-64 yrs; N=6569)**

	Behaviour and signific. more complaints (p <.05)				Behaviour and significantly less complaints (p <.05)			
Health related behaviour	**Sex**	**Complaint**	**Odds-ratio**	**Sig.**	**Sex**	**Complaint**	**Odds-ratio**	**Sig.**
former smokers (quit > 5 years)	♂	musculoskel.	1.28	.048	♂	cold etc.	1.41	.012
	♀	musculoskel.	1.32	.013				
former smokers (quit ≤ 5 years)	♂	stomach	1.63	.021				
	♀	psychological	1.34	.025				
	♀	musculoskel.	1.37	.016				
	♀	bowel	1.47	.019				
	♀	stomach	1.70	.007				
	♀	weight probl.	1.90	.000				
light smokers (<10c/d)	♀	psychological	1.29	.028	♂	headache	1.32	.045
	♀	stomach	1.46	.035				
mod. smokers (11-20 c/d)	♀	psychological	1.42	.002				
	♀	bowel	1.51	.004				
	♀	stomach	1.57	.010				
	♀	urinary/menstr.	1.47	.010				
heavy smokers (>20 c/d)	♂	musculoskel.	1.48	.003				
	♀	headache/dizzy.	1.40	.013				
	♀	psychological	1.79	.000				
	♀	cold etc.	1.35	.032				
	♀	digestive	1.53	.030				
	♀	musculoskel.	1.38	.018				
	♀	bowel	1.48	.018				
	♀	stomach	1.65	.011				

Table 6. **The association of smoking behaviour with the recording of one or more days with symptoms in health diaries after controlling for social position and lifestyle. Association as odds-ratio's (reference category: non-smoker). Data from Dutch National Survey of General Practice (ages 25-64 yrs N=5655).**

	Behaviour and significantly more complaints				Behaviour and significantly less complaints			
Health related behaviour	**Sex**	**Complaint**	**Odds-ratio**	**Sig.**	**Sex**	**Complaint**	**Odds-ratio**	**Sig.**
former smokers	♂	CNS	3.83	.030				
(quit > 5 years)	♂	back	1.70	.011				
	♀	eye/ear	2.17	.032				
fomer smokers	♀	cardiovasc.	2.25	.021	♂	bowel	2.13	.037
(quit ≤ 5 years)	♀	psychological	3.60	.013				
light smokers (<10c/d)	♀	psychological	3.70	.006	♂	headache	1.56	.014
	♀	urinary	1.55	.040				
mod. smokers (11-20 c/d)					♂	urinary	5.67	.031
					♂	bowel	2.51	.004
heavy smokers (>20 c/d)					♀	respiratory	1.80	.030

Appendix 1. Variables in the Dutch Survey of General Practice used in this paper.

1.Checklist of symptoms [1]

dizziness, headache, fever, fatigue, nervousness, insomnia, general weakness, aggressiveness (frustration), unbalanced nerves, extreme perspiration, soar throat, ear pain, buzzing in the ear, hearing problems, nasal congestion, nose bleeding, cough, palpitations, swollen ankles, nausea, chest ache, vomiting, diarrhoea, heartburn, stomach ache, cramps, constipation, gaining weight, eating disorders, toothache, painful urination, incontinence, menstrual problems, complaints about neck shoulder or hip, back pain, complaints about limps, problems at work, family problems, problems with contraception.

For a concise presentation these complaints were grouped in larger categories.

1.	headache/dizzy.	headache, dizziness
2.	psychological	fatigue, nervousness, insomnia, general weakness, aggressiveness (=frustration), unbalanced nerves, extreme perspiration
3.	cold etc.	fever, cough, soar throat, nasal congestion
4.	digestive	nausea, vomiting, eating problems
5.	cardiovasc.	sultriness, palpitations, chestpain
6.	musculo-skeletal	complaints about neck shoulder or hip, back pain, complaints about limps
7.	bowel	diarrhea, cramps, constipation
8.	stomach	heartburn, stomachache
9.	weight problems	swollen ankles, gaining weight
10.	urinary	painful urination, incontinence (♀ incl. menstrual problems)
11.	ear	earpain, buzzing in the ears, hearing problems

Not included in these categories are: nose bleeding, tootache, problems at work, family problems, problems with contraception.

2. Health diary:

Q: Did you have any complaints about your health today?

Respondents who answered 'yes' were asked to mention their complaints in their own words, with a maximum of two complaints on each day in separate boxes. When experiencing more than two complaints they were asked to mention the two most important complaints. Related complaints (e.g.

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1. The current health problems in this checklist are described in the terms that a lay person would use. The translation into English is intended to remain as close to the Dutch wording as possible. It is inevitable that divergences exists between the Dutch and English lay persons terminology of health complaints.

coughing, sneezing, fever) should be entered together in one box. The respondents were allowed to use their own words. They used terminology that could be related to both symptoms and diagnosis.

Complaints were coded in 97 categories. The coding scheme was based on ICPC chapters. This scheme was also used in the questionnaire to assess reasons for encounter with the GP, as reported by the patient. With 97 categories the coding scheme is not practical for a statistical analysis. For the present analysis the complaints were grouped in 18 larger categories which were previously used in the Nijmegen Area Study. That study also assessed health complaints with open-ended questions. These 18 categories are listed in table 2. Additional information on the grouping of the original answers of the respondents in 97 categories and the second step of grouping these categories into 18 larger groups is available from the author.

3. Social class:
manual/non-manual/independent farmers and craftsman (categories of social class adapted from the schema developed by Goldthorpe and his coworkers, ref. Erikson, Goldthorpe, Portocarero: 1983)

4. Living arrangement:
female: alone/one parent household *) /two parent household *) /two (or more) adults living together (married or unmarried, may be children of 18 years and over). for males: alone and one parent household are combined.

*) with one or more children under the age of 18.

5. Daily activities:

male: employed (incl. unpaid employment)/unemployed/disability pension/early retirement/rest: housekeeping, full-time education, militairy service and other unspecified.
female: employed (incl. unpaid employment)/housekeeping/unemployed,disability pension/rest: early retirement, full-time education, militairy service and other unspecified.

6. Religious conviction and church attendence:

A combination of two variables resulting in the following categories: no religious conviction in past and present/conviction in the past but not present/conviction in the present and infrequent church attendence (few times a year or less)/conviction in the present and frequent church attendence (once a month or more)

7. Education:

Highest attained educational level (not necessarily completed): primary school only or lower vocational level/intermediate general education or vocational training (o-level)/secondary education (a-level) or higher vocational training or university

8. Lifestyle:

Smoking: (0) never-smoked, (1) former smoker, (2) light smoker: ≤ 10 cigarettes daily *), (3) moderate smoker: 11-20 cigarettes daily *),(4) heavy smoker: ≥ 21 cigarettes daily *).
*) or cigars/pipes.

Alcohol consumption: (0) abstainers: no alcohol during the past 6 months,(1) moderate or light alcohol consumption: drinking alcohol during the past 6 months but less then heavy.(2) heavy drinking: ♂ ≥ 4 glasses daily or ≥ 5 glasses almost every day, ♀ ≥ 3 glasses every day or ≥ 4 glasses almost every day.

Exercise: active sport participation: yes or no.

Overweight: Body Mass Index: ≥ 27 (kg/m^2)

10. Interest in health matters
Interest of the respondent in topics discussed in the health interview (as rated by the interviewer): (0) neutral, (1) not interested, (2) interested.

Appendix 2. A Comparison of the occurence of complaints in different surveys from the Netherlands.

Considerations of reliability make it worthwhile to compare the instruments with which the occurrence of acute symptoms was assessed to results from similar surveys.

The checklist data are compared with the checklist that the Central Bureau of Statistics used in a pilot study, carried out in 1983 (Van Sonsbeek, ..). Both checklists present 33 complaints in the same order. In the Survey of General Practice some complaints have a different wording or are a combined category, which provides much of the explanation of the different results. There is a remarkable similarity for those symptoms that are described in the same way.

Table A2.1.

When we compare our diary data with the Nijmegen Regio Study which also used open-ended questions, we do not find the same level of agreement. In particular fatigue, bowel complaints and headache are much more often mentioned in the diary study.

Table A2.2.

Table A1. The occurence of health complaints in a period of 14 days as recorded with the checklist of the health interview in the Dutch Survey of General Pactice (1987/1988) and with the checklist of the health interview in the pilot study of the Health Interview Survey of the Central Bureau of Statistics. (ages 16 years and over, data are weighted to resemble the Dutch population)

Symptom on the Checklist	Survey General Practice	Central Bureau of Statistics
1. Dizziness	11	11
2. Headache	32	27
3. Fever	5	3
4. Fatigue	32	32
5. Nervousness	21	25
6. Insomnia	18	17
7. Weakness	13	15
8. Easily aroused	16	20
9. Extreme perspiration	11	11
10. Soar throat	12	8
11. Ear pain	4	3
12. Buzzing in the ear	7	8
13. impaired hearing	10[1]	8
14. nasal congestion	20	20
15. nose bleeding	2	2
16. cough	20	16
17. sultriness	9[2]	4
18. palpitations	7	4
19. swollen ankles	5	6
20. nausea	6	5
21. chestpain	8[3]	4
22. tightness of chest	-	5
23. vomiting	3	1
24. diarrhea	5	3
25. heartburn	7	5
26. stomach ache	6	3
27. cramps	7	6
28. constipation	8	5
29. eating disorders	2	2
30. painful urination	2	2
31. incontinence	3	2
32. menstrual problems	5	5
33. backpain	19	14
Number of respondents	10147	529

Table A2 The occurence of health complaints in a period of 14 days as recorded in health diaries of the Dutch survey of General Practice and in the health interview in the Nijmegen Regio Study (ages: 18-64 years)

Complaint group	Survey General Practice *)	Nijmegen Regio Study
1. Common cold/flu	10.8	16.4
2. Headache/migraine	23.2	12.4
3. Musculo-skeletal (ex. 4)	13.3	9.6
4. Back	8.4	8.2
5. Stomach	5.0	3.0
6. Skin	2.0	3.0
7. Urinary/genital	3.5	2.8
8. Cardio-vascular	2.7	2.4
9. Digestive system (ex. 5,10)	0.3	2.4
10. Bowel/intestines	6.8	2.2
11. Skin (wounds etc.)	0.2	2.2
12. Psych-ological/-iatric	1.1	2.0
13. Tooth-ache	1.5	1.9
14. Fatigue	16.8	1.6
15. Eye/ear	1.9	1.3
16. Respiratory (ex. 1)	8.1	1.2
17. Centr. Nerv. system	1.8	1.1
18. General + Blood + Rest	4.4	2.2
Number of respondents	6881	3245

*) Data from the Dutch National Survey of General Practice (weighted). Only complete records for the entire diary keeping period are used. (N=8677) Respondents were asked to describe their health complaints, with a maximim of two, in their own words. The complaints are grouped in broad categories which were previously used in a health survey in the Nijmgen area to categorize open-ended questions (Furer & Tax, 1987).

1. with the addition of hearing problems

2. with addition of 'breathing problems'

3. in combination with 'tightness of chest'

Artikel 3.

Measuring the occurrence of common symptoms of ill health: why do health diaries and retrospective questionnaires lead to different results ?

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(artikel aangeboden aan: Social Science and Medicine)

Measuring the occurrence of common symptoms of ill health.

Why do health diaries and retrospective questionnaires lead to different results ?

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Measuring acute symptoms of illness

Why do health interviews and health diary studies lead to different results ?

Abstract

This paper deals with measuring the occurrence of acute symptoms of ill health. Health interview surveys often contain a checklist for this purpose. Some researchers have used health diaries. Both instruments do usually lead to different results. It is hypothesized that the results from interviews that use checklists are more sensitive to the respondent's psychological distress than the open-ended questions of health diaries. Health diaries on the other hand are demanding high levels of compliance which may lead to underreporting of symptoms.

The hypotheses were tested with data from the Dutch Survey of General Practice, a nationwide study among 161 GPs. A random sample of 100 patients per GP was approached for a health interview and asked to keep a structured health diary during three weeks. Symptoms were recorded during the interview with a checklist and queried in the health diary with open-ended questions. The occurrence of symptoms was modelled with logistic regression.

High levels of psychological distress come with a greater likelihood of recording symptoms for both instruments, with an excess for the interviews. Respondents who have only received limited education, heavy smokers and those who are less interested in health matters have a significantly lower likelihood of recording symptoms in the diary. Women have a higher probability of recording symptoms than men, but there were no significant gender differences between interview and diary data. Work and domestic role obligations only lead to significant differences between instruments for the occurrence of musculo-skeletal symptoms.

The criticism that symptom checklists are very sensitive to psychological distress rather than to physical illness alone, is confirmed in our study. Open-ended questions may lead to less bias, but have the disadvantage that fewer symptoms are recorded when used in a retrospective interview. Health diaries with open-ended questions 'produce' more symptoms but take more effort to complete. Diary studies therefore work best with sufficiently motivated respondents. It is recommended to develop a specific list for the assessment of acute symptoms that is less biased than the currently available lists.

Measuring the occurrence of common symptoms of ill health.
Why do health diaries and retrospective questionnaires lead to different results ?

Introduction

Among epidemiologists and medical sociologists, it is common knowledge that most of the symptoms of ill health are not brought to the attention of a professional. In a study carried out in the 1960s, Wadsworth et al. found that more than 95% of their respondents experienced health complaints in the two weeks preceding the interview. Only 20 percent of these respondents saw a physician for these complaints [1]. Other studies reported similar and even lower consultation rates [2-4]. These unreported problems mainly consist of minor every day illness like headaches, fatigue and common cold, although serious conditions remain unreported as well [4-5]. The undetected morbidity is commonly referred to as the clinical iceberg or iceberg of morbidity [6,7]. How large is this iceberg?

Both social scientist and epidemiologists have, for various reasons, tried to the estimate the total amount of health problems in the general population. They have estimated the size of the iceberg of morbidity and also used the results of their work as estimates of the 'need' for health services [7]. Typically their research consists of an oral or postal survey, in which a random sample of the population is queried about the experience of acute symptoms of ill health in a certain period and about the presence of chronic conditions, disabilities and handicaps. Physical examinations carried out by trained

physicians are exceptional in this type of research [8]. Health surveys have been carried out throughout most of Western-Europe and North-America over the past decades [9].

When comparing the results of these surveys it is striking that the estimates of the occurrence of health complaints differ substantially, not only across countries but also within countries. In the Netherlands, Van Sonsbeek carried out a methodological study which compared the results that were obtained with a questionnaire and a symptom checklist with those obtained with a similar questionnaire but open-ended questions about acute symptoms [10]. About 78 percent of the respondents who completed the checklist reported to have experienced one or more symptoms of ill health in two weeks, whereas only 42 percent of the respondents who answered to the open-ended question, reported symptoms over the same reference period. It should be noted that similar differences where found between estimates of the presence of chronic conditions [11-12]. This paper is limited to measurement problems of acute health complaints.

'How can the truest picture of population symptom experiences be obtained?' is a question that Verbrugge and Ascione addressed in their article on the iceberg of morbidity [7]. They mention a number of requirements which should be fulfilled in health surveys in order to obtain the most valid assessment of population symptoms. Their recommendations encompass data collection, coding and publication. In their view the instrument should allow for a full scope of symptoms and reports of symptoms should not depend on whether or not any action was taken for them. They prefer open-ended queries over a symptoms checklist and a prospective query (health diary) over retrospective interviews[1].

Now listing requirements is one thing, meeting all of these requirements is quite

another. Financial and time constraints do limit the choice of methods and often a retrospective interview with a symptom checklist is the best that a researcher can get for his or her money. What difference does the method of inquiry actually make?

A Comparison of methods

Researchers who are designing a health survey are confronted with at least two fundamental choices: (1) the choice of either a retrospective assessment of symptoms during an interview or a prospective method like a health diary (2) the choice of either a symptom checklist or an open-ended question about symptom experiences. These choices often depend on a number of practical considerations like availability of resources, time constraints and sample size.

Several authors have mentioned strengths and weaknesses of either method, which are put together in the following table [7,10,13,14,15,16,17].

Table 1. about here

A comparison of the characteristics of different methods shows that a retrospective interview with a checklist is both inexpensive to carry out and easy to process in data-analysis. There are however some doubts about the validity of the obtained results. Firstly, it is doubtful that respondents will remember the occurrence of symptoms in a reference period correctly [18]. They may also forget some symptoms. In particular when they are at the bottom of the symptom list or not explicitly mentioned but added

as a auxiliary, open-ended category. With checklists some bias seems inevitable: symptoms at the beginning of the list are overrated, while those at the bottom are under reported. Another problem is the choice and the wording of the symptoms: should only symptoms be mentioned (fever, running nose) or should the list contain common names for frequent diseases (flu or cold)? Most symptom lists are derived from questionnaires that are used in clinical settings, like the Cornell Medical Index [19]. These lists are designed to establish the medical history of individual patients and are probably less suited for epidemiological purposes.

Checklist have also been criticized for measuring psychological distress or neuroticism rather than illness or disease [20-24]. Mechanic argues that symptom reporting reflects a pattern of illness behaviour which is to a great extend influenced by the affective state of the individual. These reports are not necessarily a sign of an underlying disease. Scales that measure 'neuroticism' or 'psychological distress' also correlate strongly with the number of symptoms on a symptom list [22,25]. In a number of experimental studies Skelton & Pennebaker found that: "there is no one-to-one correspondence between responses that occur at the physiological level and our experiences of bodily sensations and symptoms" [26]. Pennebaker and his colleagues also observed that patients who were informed about their high blood pressure or high blood glucose levels, indicating diabetes, began to experience symptoms that they had not experienced before [26,27]. Their studies confirm the views of Mechanic.

There appears to be strong criticism of the combination of a retrospective interview and a symptom list, but what are the alternatives? The use of an open-ended question in a retrospective questionnaire is very likely to miss many of the minor complaints that people tend to forget after a week or even after a few days. Although many of these symptoms are probably not serious, they are part of the iceberg of morbidity and

provide for instance valuable information in research on the extend of self-medication for common illnesses. This problem of memory lapse could probably be better addressed with a prospective instrument like a health diary than with a recall aid like a checklist [28]. But also the use of a health diary has its drawbacks, mainly because it demands more time and effort on the side of the respondent. People with very little time to spare or those who lack motivation are likely to refuse participation. Moreover, participation does not mean compliance with the, often as strenuous perceived, task of completing the diary every day. Health diary studies therefore frequently use compliance enhancement strategies, like weekly phone-calls or lotteries, which all may have an effect on the outcome of the study [14,15,29,30].

Another problem with the open-ended question is that respondents are invited to define their complaint in, most literally, their very own words: symptoms, lay terminology for common diseases or a medical diagnosis, probably based on hearsay, are all to be found in health diaries. The open-ended question may lead to serious and time consuming coding problems.

In sum, there is no ideal method to assess the occurrence of common daily health problems. Perhaps the best one can hope for is to develop a set of rules which could guide researchers to use a particular method in a particular situation. This paper is intended to make a contribution to that aim. It compares the reports of symptom experiences obtained with a health diary that uses open-ended questions with the results of a health survey that uses a retrospective checklist. Both were completed by the same respondents. Past research experiences with these instruments allow us to formulate some hypotheses about the differences that are likely to occur between health diary and questionnaire. Since the questionnaire only contains a checklist and the diary only open-ended questions, it is not possible to compare all four combinations

that come with these two instruments (ref. Table 1).

Hypotheses

Health diaries and questionnaires differ in a number of ways but they could be used for a common purpose: to assess the occurrence, or better, reporting, of health complaints (with or without specification of the nature of the complaint) in a certain period. A number of hypotheses deal with the differences on this dichotomous variable that may be attributed to the instrument that is used.

The first hypothesis relates to the assumption that checklists measure psychological distress or neuroticism rather than illness. This hypothesis addresses the core of the criticism against the use of checklists. If its is true that a symptom checklist is in fact an instrument to measure psychological distress, or at least more so than an open-ended question about symptoms in a health diary, than the following situation should apply. Respondents who are in a state of psychological distress have a high probability of reporting complaints when completing the checklist. Very likely they also have a more than average probability of reporting complaints in the health diary. The odds of reporting complaints will however be higher for the checklist than for the diary, since the checklist is more sensitive to psychological distress. Respondents who are emotionally stable will have a low probability of reporting complaints, both on the checklist and in the diary. In other words, we expect that the increase in the likelihood of reporting complaints with increasing levels of psychological distress is disproportional high for the checklist, compared to the open-ended questions of the health diary. Figure 1. illustrates this hypothesis.

Figure 1. about here

The rates that are obtained with the checklist are placed on the left hand side because the questionnaire precedes the diary in time. From other tabulations of these data, we know that the rates on the questionnaire are higher than the rates in the health diary [31].

It was stated before that health diaries have advantages over questionnaires, in particular when it comes to recall bias. Keeping a health diary every day for a period of two or three weeks on the other hand means considerably more effort than responding in a face-to-face interview. The chances that the health diaries are completed properly at the end of each day is to a certain extend determined by the motivation and the time constraints of the respondents. All other hypotheses of this paper deal with personal characteristics of the respondents that are likely to enhance or reduce compliance with the regimen of diary keeping, which means that all symptoms of ill health are entered in the diary on a daily basis. In our data compliance cannot be assessed directly, but will be inferred on the basis of comparing the results obtained with the questionnaire with those from the diary in a single statistical analysis.

We expect that respondents who are interested in health matters and/or have little time constraints or role obligations (like family or work) are more likely to complete the diary accurately. Those who are less interested in health matters or under severe time pressures are less likely than others to record every minor health problem or make daily entries.

Women are more attentive to their health than men, which is obvious for anyone who

takes the trouble of leafing through some popular women's (or mens) magazines [32]. Some researchers who used health diaries have gone as far as to approach only women as informants about the health of their families [16,17,30,33]. Evidently, this procedure may lead to a serious underestimation of men's health problems [34]. In our study with both male and female respondents we expect a higher level of compliance among women.

Studies of response behaviour in social surveys has shown that people with only lower education are less reliably answering socio-medical questions [35]. Education is also an important factor in taking an interest in health matters [36]. Extending this finding to our diary study we expect higher compliance among those who have attained a higher educational level.

The last group of variables that we consider go under the heading of health behaviour or lifestyle. This interest in the relationship of lifestyle and symptom reporting is based on an earlier paper in which we argued that those who have a relatively 'unhealthy' lifestyle (e.g. smoking, excessive alcohol consumption) are less interested in health matters and less attentive to symptoms of ill health [36]. It was assumed that an 'unhealthy' lifestyle leads to cognitive dissonance caused by the disparity between knowledge about health risks and actual behaviour. The individual may seek to reduce dissonance by becoming less attentive to symptoms of ill health. In yet another paper, bivariate tabulations of the data also showed more significant relationships of lifestyle and health complaints for our questionnaire data than for the health diaries [31]. The daily symptoms that come with an unhealthy lifestyle are probably not considered sufficiently 'serious' to be mentioned in the diary but are acknowledged in the checklist with its open invitation to complain. In the present paper we would like to find out if lifestyle makes a significant contribution to the answering patterns when other factors

are accounted for, assuming that a relatively unhealthy lifestyle leads to a lower probability or reporting complaints in the diary.

How does compliance affects the probability of recording complaints in either diary or on the checklist? Responding on the checklist is not very demanding for the respondent. It may be expected that those who are motivated or less motivated do not differ much in their answering pattern. On the other hand, responding to the instructions for the diary is more demanding and we expect that differences in motivation lead to a larger spread in the probabilities of having complaints in the diary. This effect differs from the hypothesis on neuroticism and is illustrated in figure 2 for the hypothesis on interest in health matters.

Figure 2. about here

Our analysis can be extended to examining particular groups of complaints. We will pay particular attention to what may be called psychological complaints and to musculo-skeletal complaints. Complaints like dizziness, fatigue and nervousness, which are readily identified as related to psychological distress should, in accordance with our first hypothesis, result in larger differences between instruments. This was in fact observed in the study of Van Sonsbeek, that was mentioned earlier [10]. In his study the checklist and the open-ended question showed the highest similarity for the occurrence of musculo-skeletal complaints. Assuming that the psychological distress hypothesis holds, we expect a minor role of psychological distress in explaining the difference between health diaries and questionnaires for the occurrence of musculo-skeletal complaints. We expect the observed differences to be more dependent on the other factors that are associated with compliance.

Apart from these hypotheses, is it worthwhile to take a look at some other differences in the occurrences of symptoms in our data and in other studies. In an extensive review of available health diary studies, Verbrugge asserted that diary studies always lead to higher rates of symptom prevalence than retrospective interviews do [17]. An earlier analysis of our data showed that this is not the case for the diaries and interviews from the Dutch Survey of General Practice: the interview data show the highest rates [31]. At the same time do the rates that were obtained with the questionnaire not differ much from similar studies (ref. Table 2). Consequently, we have to ask ourselves how typical our data are in comparison with other studies that use health diaries. These other studies use, with one exception, longer periods of diary keeping, which rules out a direct comparison. A comparison can however be made, by extrapolating the occurrence rate for three weeks to an estimated occurrence rate for four or six weeks.

Data

Our study consists of a secondary analysis of data from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 surgeries using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables [37]. A random sample of 100 patients of each General Practitioner was approached for a health interview. The patients were approached with a letter from the GP at their home address. The sample was not limited to patients who had recently visited the surgery or are currently undergoing treatment; also patients who had not seen their GP for a long time were approached. In the Netherlands nearly the entire population is listed with a GP. At the end of the interview, the respondents were asked to keep a structured

health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The short interval between those two measurements allow us to assume that the health status of the respondents has not changed dramatically. The interviewer made an appointment to collect the diary with the respondents who agreed to take part in the diary study. During the diary keeping period the interviewer phoned twice to check if there were any problems with the completion of the health diary. The interviewers also checked the entries of the respondents when collecting the diaries. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (Total N = 11038). For children of ages up to 14 years old proxy interviews were held with one of the parents or guardian. These data and all other cases based on proxy interview are not used in this paper.

A previous analysis of the response in the health diary study compared the level of cooperation among respondents [38]. With (full) cooperation we mean that respondents agreed to take part in the diary study and returned it to the interviewer after three weeks with entries about their health for each day. This analysis showed that the level of cooperation (not keeping the dairy, keeping the diary for one day, two days etc.) was significantly lower among the elderly, respondents in poor health and among those with either a very low or a very high level of education. The interest that the respondent takes in health matters was the best predictor of cooperation.

The majority of the respondents agreed to take part in the diary study and it is to the behaviour of those respondents that we turn in the remainder of this paper. Cooperation does not necessary mean compliance with the requirement of the study that the respondent completes the diary at the end of each day. Some respondents might have forgotten about the diary for one or more days and complete it retrospectively when the interviewer comes around to collect the diary. For those respondents the diary will resemble a ordinary questionnaire with retrospective

questions. Since these are open-ended questions they are likely to lead to lower counts of symptoms.

Let us briefly examine some of the characteristics of our instruments. The health diary consists of a 21 paged booklet with a simple one-page questionnaire to be completed each day. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words, followed by a series of precoded questions on the assessment of the complaint and the illness action prompted by the complaint on that day. In other words: on days with complaints there was more work to do than on days without complaints, an artefact which is likely to have an effect on the response rate[2].

The health interview with the same respondent provided the information on health status and background variables like sex, age, education etc (see the Appendix for a complete list of variables used in this paper). During the interview the respondents were asked to complete several checklists on their health status, with one list of acute symptoms. This list contained 42 precoded items and 3 open-ended items for additional complaints. The respondents were asked to indicate for each item if they experienced that symptom/condition during the previous fortnight. This checklist was originally developed for a study designed to have physicians estimate the severity of daily symptoms and was used in several other studies with which comparison of our results is possible [10,39]. Our version of the checklist contains some additional symptoms and some minor alterations. The respondents were also asked to complete a list of chronic conditions. This list has been developed for a study on the occurrence and care for chronic conditions among the elderly and was subsequently used in several health surveys [40]. In this study the number of chronic conditions is used as an explanatory

variable, indicating what may be coined as a 'baseline' of the respondents health status. The inclusion of this variable in the subsequent analyses allows us to interpret the effect of other characteristics as 'net' effects, independent of health status.

The first hypothesis deals with psychological distress or neuroticism. The questionnaire contained several instruments with which the mental health status of the respondents was assessed: Goldberg's General Health Questionnaire and the BIOgraphic PROblem list, a scale aimed at measuring the presence of psycho-social problems [41,42]. Our survey did however not contain an instrument specifically designed at measuring neuroticism like the Eysenck Neuroticism scale or its Dutch equivalent. Goldberg's questionnaire is a screening instrument for use in general practice settings. It performs well in detecting anxiety and depression but is not intended to be used for the detection of psychoses [43]. Several authors have described the GHQ as an indicator of psychological distress or neuroticism [44-46]. It should be noted however, that the GHQ is intended to register acute psychiatric symptoms based of the respondents experiences in the previous four weeks and not meant to measure neuroticism as a personality trait. Researchers who used the GHQ and a Eysenk's Neuroticism scale simultaneously, found similar associations with socio-demographic variables but report that there are some marked differences between both instruments among the elderly of 75 years and over [47]. These results led us to decide to exclude the elderly of 75 years and over from our analyses. Some of the questions on the 30 item version of the GHQ resemble questions on the symptom checklist. Both lists contain questions about sleeping problems and nervousness. Another checklist was therefore used to validate the results obtained with the GHQ. The Biographic Problem list contains 22 questions covering a wide variety of common problems ranging from 'difficulties in establishing relationships with others' to 'worries about the future' (see appendix 1 for a list of all items). The BIOPRO has satisfying scaling properties. In a panel-study on psycho-social problems,

Cronbach's alpha was .76 and .78 in the first and second wave respectively [48]. Previous users of the problem list argue that in several studies a simple counting of problems was strongly correlated with indicators of distress [42,49-52]. A disadvantage of the BIOPRO is that it is a less-well established instrument than the GHQ and that the results of this scale are not extensively validated. There is also some overlap between the BIOPRO and the symptom checklist. The symptom checklist also contains questions about social problems aimed at measuring social health. The overlap is much smaller than the overlap between the GHQ and the symptom checklist.

It has been stated before that the completion of the diaries requires more effort than completing a checklist of symptoms of ill health. Compliance with this task will depend on the time that the respondent is able and willing to sacrifice. In our analysis we defined time constraints differently for men and women; for men heavy time constraints were primarily related to the demands of work whereas for women combining work and the rearing of children was considered as such. For both sexes we considered combining a job with being a head of a one-parent family as a living condition with severe time limitations. We assume that (disability) pensioners, the unemployed and women who are housekeeping in a family without children, face very little time constraints and consequently have less trouble keeping the diary on a daily basis. A successful health diary study will also depend on the motivation of the respondents. We assume that respondents who show more interest in health matters are also keener on completing the diary. The respondents were not directly asked to rate their interest in health matters. The interviewer rated this at the end of the interview[3].

The final hypothesis states that health habits like smoking and alcohol consumption may also have an effect on the reporting of daily symptoms. During the interview the respondents were asked about their current and previous alcohol and tobacco

consumption. We distinguish three levels of drinking: abstaining, light or moderate drinking and excessive drinking[4]. There were only very few abstainers who reported heavy drinking in the past. We therefore did not account for previous drinking habits. For smoking habits we distinguished former and current smokers (light, moderate and heavy smokers) and respondents who have never smoked.

Both checklist and health diary could be used to assess the occurrence of health complaints in a period of 14 days: the checklist uses 14 days as a reference period and from the diary study we use the first two weeks[5]. Both studies then provide us with a comparable estimate about whether or not any health complaints occurred. When it comes to the nature of complaints, checklist and health diary differ: the checklist records the number of complaints in two weeks while the health diary records the number of days with complaints, restricting the number of complaints on each days to two. It follows that only the dichotomous variable (yes or no complaints; specified or unspecified) is comparable for both instruments.

The diary contained two open-ended questions on the nature of the symptoms of ill health and a coding system needed to be developed. The health complaints of the diary were coded in 97 categories along the lines of the ICPC chapters [55]. This coding system was originally used in the questionnaire part of our study to assess the respondent's reason for encounter with a General Practitioner.

Three comparisons between checklist and diary were made. First the reporting of complaints was compared irrespective of the nature of the complaints. The other two comparisons were directed at the occurrence of specific complaints: (1) complaints related to psychological distress and (2) musculo-skeletal complaints. These specific complaints were defined as follows. The checklists contains a number of complaints like

dizziness, fatigue, nervousness that could easily be labelled as related to psychological distress or 'psychological complaints' for short. Of other complaints like headache or extreme perspiration there was less certainty (see Appendix). A Principal Components analysis on all items of the checklist helped in distinguishing a set of complaints that have psychological distress as a common denominator (these complaints are also listed in Appendix). A similar procedure was carried out to distinguish musculo-skeletal problems. After defining these groups for the checklists the closest matching titles from the 97 categories in the diaries were grouped under the same headings.

Methods

The data analysis started with a comparison of the occurrence of complaints in several studies from the Netherlands, including our own, that use either open-ended questions or a checklist. The other studies are based on retrospective interviews that, with one exception, use 14 days as a reference period [3,10,39,49,56]. From our health diary study we use the occurrence of complaints in the first 14 days.

A second comparison looked at the results of different health diary studies. Expect for an American study among the elderly, these other studies used longer references periods than our own [7,14,57]. Our results of three week diary keeping needed to be extrapolated to either four or six weeks. For this purpose we fitted several versions of the (piecewise) exponential model to our data [58]. This model assumes that the duration or 'survival' without complaints during the diary keeping period is governed by a process in which the probability of obtaining complaints (the hazard rate) is constant over (certain parts of) the diary keeping period[6]. The following equation, shows the survival for either the entire period or pieces of that period.

$S(t) = \exp(-b*t) - a;$

S(t)	=	survival without having had symptoms in the diary keeping period.
a	=	intercept indicating proportion surviving until certain days in different versions of the model[7].
b	=	hazard rate; indicating the daily decline in the proportion surviving.

Three versions of the piecewise model were estimated with unconstrained non-linear regression, using different time intervals to estimate the regression coefficients (day 1-21; day 8-21; day 15-21) [59]. A model without intercept: $S(t) = \exp(-b*t)$ was estimated with OLS regression of Ln {S(t)} or non-linear regression of S(t)[8]. Several models were estimated because the hazard rate (b) may not be the same during the diary keeping period: at the beginning of the study respondents may become sensitized to monitoring symptoms whereas towards the end, respondents might grow weary of completing the diary every day. The complement of the estimated survival curve, the cumulative distribution function: $F(t) = 1-S(t)$, allowed us to estimate the percentage of the respondents with complaints in the periods of either four or six weeks.

Let us now turn to the statistical analysis of the previously mentioned hypotheses. If a questionnaire with a checklist and a health diary with open-ended questions about health complaints are equivalent instruments, both should result in the same percentage of respondents that record symptoms over a period of 14 days. Our hypotheses assume that these percentages differ. How should these differences be assessed? For both instruments could the dichotomous variable: occurrence or non-occurrence of symptoms, be modelled with logistic regression, in which the variables pertaining to the

hypotheses serve as predictors. The effect of each of these predictors on the occurrence of symptoms in either health diary or questionnaire is of limited interest, however. Our primary concern lies with the (magnitude of) the difference between instruments. These difference can be modelled in a single equation when a dummy variable for instrumental effects is created and interactions of this dummy variable with each of the predictors are incorporated in the model [60]. The magnitude and significance of these interactions will help us to decide if the hypotheses should be rejected or not. The difference between main effects, while treating either diary data of questionnaire as a reference category, helps us to discern the type of difference that occurs between instruments (figure 1 or figure 2). The respondents in our study completed both questionnaire and health diary and these response variables could therefore not be treated independently in one equation. Independent observations were obtained by assigning respondents randomly to two groups, which contributed to the analyses with either the diary or the questionnaire data on the occurrence of symptoms. Three logistic regression were carried out in this way: the first analysis used the probability of the occurrence of symptoms, irrespective of its nature as response variable, whereas the two other analyses looked at the occurrence of specific symptoms. The following variables were entered in the analyses simultaneously: (1) psychological distress (GHQ or BIOPRO), (2) interest in health matters, (3) educational level, (4) time- and role obligations, (5) smoking and drinking habits, (6) the number of chronic diseases, (7) age, (8) sex and finally (8) the dummy variable for the instrument that is used. In these analyses are age and the number of chronic diseases entered as control variables. The other predictors are related to the hypotheses and consequently, interactions with the dummy variable for method are included in the analyses as well. Models that use this set of variables were compared to models that include interactions with the control variables age and the number of chronic diseases. The differences in fit between the two models were assessed with likelihood ratio tests [61].

Results

Several studies (including our own) from the Netherlands could provide estimates of the occurrence of acute symptoms of ill health in the general population. The next tables summarizes their findings.

Table 2. about here

The table shows that the use of a checklist to assess the occurrence of common complaints leads to very similar results. The checklist in the Survey of General practice contains a few more precoded questions than the checklist in the study of the Central Bureau of Statistics (CBS) but is very similar otherwise. It is therefore not unusual that the percentage is a little higher in the Survey of General Practice. The 'Nederland Oke' study used the same checklist and a reference period of seven days. A reference period of one or two weeks makes relatively little difference in the percentage of respondents with complaints, for which recall error (telescoping) in retrospective questionnaires is a plausible explanation [18].

The table also shows that the percentage of respondents with symptoms is considerably lower when open-ended questions are used. The study from the CBS and the regional study from Rotterdam use a simple open-ended question about having had health complaints in the past 14 days. The results from these studies are markedly similar. The study from Nijmegen put specific emphasis on mentioning minor complaints in the wording of its open-ended question. This may have led to a slightly higher rate. The health diary study with open-ended questions leads to higher rates than the surveys with

open-ended questions but to lower rates than surveys with checklists. Finally the differences between instruments seem larger than the differences within instruments, provided that the wording of the questions is similar.

Although health diaries usually provide higher rates of symptoms occurrence than retrospective interviews, the data from the Dutch Survey of General Practice do not. We have seen that our data from the retrospective interviews are similar to other studies. These findings raise the question of the comparability of our health diary study. The next table shows the results of several health diary studies (percentages of the sample with symptoms) along with estimates of these percentages for similar sub-samples of data from the Dutch Survey of General Practice.

Table 3 about here

This last comparison of this table demonstrates that in particular the percentage of elderly respondents with health complaints in a period of three weeks is relatively low in the Dutch data. It should be noted that the study of Stoller et al. uses health diaries with a checklist whereas the Dutch data use open-ended questions. The comparison with other studies has to be made with extrapolations of the Dutch data. An extrapolation of the survival function of the entire 3 week period leads to results that are similar to the diary studies that asked their respondents to keep the diary for 4 or 6 weeks.

When on the other hand only the last week of the diary keeping period is used, which is more realistic for extrapolation than the entire period, the results do differ. Extending the hazard rate of the last week leads to lower estimates of the percentage of

more days with specific symptoms (or entries on the checklist), as the occurrence category, regardless of other symptoms, whereas the non-occurrence category consists of respondents who either did not experience symptoms at all or only symptoms that do not belong to the specific category at which the analysis aims.

The results of the logistic regression for the occurrence of symptoms related to psychological distress is shown below.

Table 6 about here

Evidently, higher scores on the GHQ increase the likelihood of reporting psychological symptoms with a strong excess of reporting complaints on the checklist. Again the educational level is a variable that has strong effects on the answering pattern in the diaries but much less so in the questionnaire. The interaction is statistically significant for all categories of education combined (Wald statistic: $p=0.013$) but not for separate dummy variables. Respondents who have attained a higher educational level are apparently more willing to report psychological in a health diary than others. During the interview smokers reported more psychological symptoms than non-smokers do, with heavy smokers having the highest probability of reporting symptoms. This relationship is virtually absent in the health diaries. Respondents with one or more chronic conditions are more likely to report symptoms during the interview than in the diary. Not taking an interest in health matters comes with a low probability of entering psychological complaints in the diary, but much less so during the interview. Again, the interaction is not significant, although the differences between instruments are much larger than in the previous analysis. Women report more psychological symptoms than men do and the probability of reporting these symptoms decreases with age in the questionnaire or are lower for the elderly in case of the diary study.

Table 7 about here

The analysis of the occurrence of musculo-skeletal complaints differs in a number of ways from the previous analyses. Firstly, there is no significant interaction between psychological distress and the instrument of inquiry, although it remains true that the probability of reporting symptoms increases with higher levels of distress. This finding is in accordance with our hypotheses about the occurrence of specific complaints. Respondents with severe time limitations or role constraints are less likely to report musculo-skeletal symptoms in the diary than during the interview. Again are smokers more likely to report symptoms during the interview than in the diary. The likelihood or reporting musculo-skeletal complaints increases with age but is lower for the elderly. The differences between the sexes are smaller than in the previous analyses.

All of these logistic regressions have been repeated with scores on the Biographic Problem list (BIOPRO) as indicator of psychological distress. The results of these analyses are very similar to those presented above with the GHQ and therefore not shown in separate tables but may be obtained from the author. The expected interaction of distress with method of inquiry holds equally for the occurrence of symptoms in general and for the occurrence of psychological symptoms. For musculo-skeletal symptoms the interaction is larger than in the analysis with Goldberg's GHQ, but not clearly significant (Wald statistic: $p = .08$ for all categories combined).

Conclusion and discussion

This paper has addressed the issue of differences in the accounts of the occurrence of acute symptoms of ill health in survey research. We have examined in some detail what differences may occur when prospective or retrospective methods are used in combination with open-ended questions or with a symptom checklist. In the empirical part of our paper we compared the results of a health interview that uses a retrospective questionnaire in combination with a symptom checklist with a prospective health diary that uses open-ended questions. The probability of reporting health complaints was lower for the diary data than for the checklist, which contradicts other comparative studies [17]. We therefore compared our data with the published results from other diary studies and found that our data led to lower (estimated) probabilities of mentioning symptoms in a certain period. This was in particular true for the elderly and for extrapolations that were based on our data from the last week of the three week diary study. There are a number of plausible explanations for the lower rates. One of them is the lay-out of the diary: on days with complaints there was more work for the respondent than on days without symptoms. Respondents were in this way rewarded for not entering their complaints. Verbrugge's diary study also meant more work on days with symptoms, but these differences were relatively small in comparison to our study [62]. Another difference is that in our study only complete records are used, whereas Verbrugge used data from respondents who completed the diary for one week or more [7]. The analysis of cooperation with our study showed that respondents who completed only part of the study are in poorer health than respondents who completed the diary for the entire three weeks [38]. The other Dutch study of Van der Lisdonk used a health diary that is very similar to ours [10]. His study however, differed in two ways. First, his sample of respondents was not representative, because he aimed at having equally large groups of high, low and average users of medical care. Second, his study was

carried out in January and February, whereas our study took place in different periods throughout the year. It seems fair to assume that wintertime comes with more health complaints. Although the rates are lower than in other diary studies, it should be noted that our diary study with open-ended questions did indeed show a higher probability of recording symptoms than health interviews with similar open-ended questions (ref. Table 2). When using the same method of query there is some 'gain' in using a diary. Unfortunately, our data do not allow us to compare diaries with questionnaires that both use checklists.

In the comparison of our diary data with the results that were obtained with the checklist we assumed that psychological distress plays a key role in the explanation of the differences in the answering pattern, with the checklist being more sensitive to levels of distress. This hypothesis could not be rejected. Contrary to our assumption did role obligations and time pressure only lead to minor differences for the recording of symptoms in general and for psychological symptoms. Musculoskeletal symptoms on the other hand were indeed significantly less recorded in the diary by those who experience severe time constraints.

The differential response of men and women that we expected was not found in our data. Women record more symptoms than men in both the diary and during the interview. We did find however, that respondents with only limited education had a lower probability of reporting complaints than could be expected on the basis of the questionnaire. Respondents who manifested themselves as indifferent towards health matters (in our study a small group of only 2%) reported very few complaints regardless of the instrument that is used.

The comparison of the health diary data and the checklist in terms of cooperation and compliance shows that health diaries are best suited for research with respondents who are likely to be sufficiently motivated to complete the diary accurately each day. Using diaries for the assessment of the health status of the population at large means running the risks of an under-representation of disadvantaged groups. For the general population, a symptom checklist would probably be best: no trouble for the respondent and easy to analyze once the data are gathered. There remains one obstacle to be removed: the potential bias of checklists towards psychological distress.

Why is it that symptom checklists are so sensitive to psychological distress or neuroticism in the first place? There seem to several factors involved. First of all, people who are emotionally unstable are probably more than others inclined to label physical symptoms as signs of illness. They are also more likely to seek help from others and consult their GP, to whom they express their concern for an underlying somatic disease [63]. In fact, they are more than others inclined to develop some kind of illness behaviour, of which the expression of the presence of symptoms is a first step.

On the basis of this relationship between distress and symptom reporting, it is understandable that instruments for the measurement of an individual's mental health status use the same descriptions of symptoms as the checklists for somatic disorders use [21]. In fact, researchers that assess mental health use our previous explanation, but turn the argument upside down: with diffuse somatic symptoms they measure mental health. Questions about physical symptoms are less threatening than a straight forward inquiry about symptoms that are easily labelled as psychiatric. Some checklists that were originally conceived of as instruments of physical health gradually became instruments for the assessment of psychological distress or mental health [19,64]. There are very few checklists that are known for measuring physical health only.

The Dutch checklists that are mentioned in this paper have origins of measuring both psychological and physical symptoms. They are modifications of the 'VOEG' checklist that was developed in the 1960s to measure distress of workers in an industrial environment [65][11]. In turn, the VOEG took 32 of its items from the Cornell Medical Index [10,17]. The CMI was designed as a checklist of a patient's medical history which the patient could complete independently in the waiting room [19]. Subsequent research with the CMI showed that it was particulary well suited to measure psychological problems that physicians do not detect during a consultation [66]. The checklists that are currently used in the Netherlands contain up to ten 'psychological' symptoms which are prominently placed at the beginning of the list (see Appendix and Table 2). There is reason to believe that a different checklist with a list of well defined physical symptoms would be less prone to the neuroticism bias. Our comparison of the reporting of musculo-skeletal complaints in the diaries and in the questionnaire is a case in point: levels of distress are still significant predictors in both diary and questionnaire but the differences in sensitivity to distress is slight. Future research of the occurrence of physical symptoms would be well advised to develop a new symptom list, rather than using one of the prevailing lists.

One final word should be probably be devoted to the iceberg of morbidity. This paper started with asking how large the iceberg actually is. Our study shows that the amount of (unreported) morbidity is not a quantity that lends itself to precise measurements. Respondents may think of symptoms differently, depending on the method with which these symptoms are assessed. In metaphoric language this would mean that the iceberg cannot be clearly delineated below water. What is ice to some is water to others. We have to conclude that the estimates of the size of the iceberg do not exist independently of the instruments with which the assessments were made.

Notes

1. The complete list of requirements runs as follows: (1) probability sample, (2) no restrictions in demographic or socio-economic characteristics that limit generalization, (3) high response rates or at least no bias in respondents, (4) full scope of symptoms, (5) open-ended query preferable to symptom list, (6) reports of all symptoms, not contingent on actions taken for them, (7) prospective query preferable to retrospective, (8) standard classification scheme for coding lay-reported symptoms, (9) presentation for age-sex groups. It should probably be noted that the authors do not provide extensive argumentation for these requirements in their paper.

2. This difference in tasks on days with and days without complaints is not in accordance with the recommendations mentioned before. It should be noted that most other diary studies, including Verbrugge's, require more work on days with symptoms than on days without symptoms.

3. Although this procedure introduces some interviewer bias, it should be noted that this rating served very well in predicting cooperation and non-response for the diary study as discussed above.

4. Definitions are based on another study from the Netherlands which used recommendations of the (British) Royal College of General Practitioners [53,54].

5. Although any period of two weeks could be used, in the first two weeks respondents suffer less from fatigue than in later stages of the diary keeping period.

6. Other parametric models of survival could be used as well. They do however require more parameters to be estimated than the single parameter (the hazard rate) of the exponential model. The published results from the other diary studies do not provide sufficient information to estimate other models than the exponential.

7. In the health diary the respondents were asked to record all symptoms on a certain day. These could be existing and new symptoms. The diary study differs in this respect from proper survival studies that record only new events or symptoms, assuming the respondent to be free of symptoms at the beginning of the study. For this reason several models with and without intercept, which accounts for existing symptoms, were estimated.

8. This model uses the entire period of day 0-21, assuming the absence of symptoms before the beginning of the study.

9. This table is based on the complete data set without the random split that is made for the logistic regressions.

10. Van der Lisdonk was consulted for advise on the lay-out of our diary study.

11. VOEG = Vragenlijst voor Onderzoek van de Ervaren Gezondheidstoestand (Questionnaire for assessment of subjective health).

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Table 1. A comparison of data collection methods in health surveys.

1. Type of questions: checklist versus open-ended

1.a. checklist with symptoms

advantages:	- uniform definition and coding of symptoms and easy analysis
	- aided recall for minor symptoms
disadvantages	- selection of symptoms
	- unknown symptom terminology
	- tedious for respondent and tail effect
	- triviality of symptoms
	- complaining on request

1.b. open-ended questions

advantages	- all types of complaints possible
	- easy to answer
	- recording of non-trivial symptoms
disadvantages	- no uniform definition of symptoms, respondents mix symptoms and diagnoses
	- coding problems

2. Type of questionnaire: retrospective (interview) versus prospective diary

2.a. retrospective interview

advantages	- easy to administer (e.g. telephone) with minimum trouble for respondent
	- interviewer can check data quality
	- inexpensive
disadvantages	- recall error: telescoping and memory lapse
	- difficult to combine complaints with illness action

2.b. diary

advantages	- minimum recall error
	- monitoring complaints and illness action from day to day
disadvantages	- conditioning: sensitization and fatigue
	- cooperation is time consuming for respondent
	- data quality is like postal survey
	- high costs
	- difficult to exploit data adequately in analysis

Table 2. The occurrence of health complaints in a period of 7 or 14 days in different studies from the Netherlands.

Study	checklist 14 days	checklist 7 days	open-ended question
CBS 1983[1]	78 %		42 %
Uniken Venema 1986[2]			41 %
Survey General Practice 1987/1988[4]	81 %		63 %[3]
Nederland oke 1983[5]		65 %	
Regio Nijmegen 1983[6]			51 %
Huygen et al.1983[7]	81 %		

1. Central Bureau of Statistics. Respondents ≥ 16 years, private households (N=1054). Weighted sample. [10].

2. Regional sample of Dutch and Turkish respondents, ages 16-69 years (N=489). The percentage with health complaints in 14 days was the same for both groups [56].

3. First two weeks in the health diary (data mentioned below).

4. Dutch National Survey of General Practice. Sample of respondents listed with General Practitioner (N=13014). For comparison with CBS respondents ≥ 16 years in private households are presented. Weighted sample [37].

5. Respondents from a panel-study, ages 20-67 years, living in private households (N=884)[39].

6. Regional sample of Nijmegen and environs. Respondents in private households, ages 18-64 years (N=3245) [49].

7. One General Practice in the Nijmegen area. Sample of families with children ≥ 12 years. Families with a chronically ill patient were excluded (N=857). Checklist differs from the other studies [4].

Table 1. Comparison of the observed percentages of respondents with symptoms in health diary studies with the expected percentage on the basis of the diary study of the Dutch Survey of General Practice

study	percentage observed	period	percentage expected extrapolating day 1-21*)	R^2	percentage expected extrapolating day 8-21	R^2	percentage expected extrapolating day 15-21	R^2
Verbrugge & Asclone								
♂ ≥ 18 years	89%	6 weeks	1. 88%	.91	1. 89%	.97	1. 70%	.99
			2. 90%	.95				
			3. 92%	.62				
♀ ≥ 18 years	95%	6 weeks	1. -	.86	1. 90%	.95	1. 83%	.97
			2. 96%	.94				
			3. 98%	.64				
Van de Lisdonk								
15-60 years								
families	86%	4 weeks	1. 82%	.89	1. 74%	.95	1. 76%	.98
			2. 84%	.94				
			3. 89%	.61				
Stoller et al.								
independent								
elderly (≥ 65 years)	83%	3 weeks	51% (observed)					

*) three different models are used: 1. $S(t) = \exp(-bt)-a$ 2. $\ln\{S(t)\} = -bt$ (OLS) 3. $S(t) = \exp(-bt)$

Table 4. Logistic regression of the probability of having health complaints in 14 days, recorded in either health diaries or during an interview with a retrospective questionnaire. *) Data from Dutch National Survey of General Practice (n=7993; ages: 15-74 years)

Indepent variables main effects	Regr. coeff.	Standard error	P-value	Independent variables Interaction with method (m)	Regr. coeff.	Standard error	P-value
GHQ				GHQ * m			
1-2	.3729	.0894	.000	1-2	.6742	.1508	.000
3-4	.6537	.1565	.000	3-4	.8906	.2983	.003
≥ 5	1.2574	.1434	.000	≥ 5	1.0247	.3327	.002
not interested in health matters	-1.1254	.3349	.001	not interested * m	-.0228	.4953	.963
interested in health matters	.0329	.0717	.646	interested * m	-.0855	.1138	.452
lower education	-.3903	.0834	.000	lower education * m	.3432	.1316	.009
higher education	.2499	.1016	.014	higher education * m	-.1136	.1572	.470
low time pressure	.0696	.1161	.549	former smoker * m	-.0865	.1535	.573
high time pressure	.0108	.0996	.914	light smoker * m	.2372	.1785	.184
				moderate smoker * m	.0177	.1723	.918
former smoker	.3761	.0977	.000	heavy smoker * m	.5219	.2140	.015
light smoker (≤ 10 c/d)	.1449	.1098	.187				
moderate smoker (11 - 20 c/d)	.3030	.1119	.007	light/mod alc. * m	.2115	.1471	.150
heavy smoker (≥ 20 c/d)	.1839	.1289	.154	heavy alc. * m	.2257	.2957	.445
light/mod alc. cons.	.1917	.0914	.036	chronic disease * m	.1866	.0371	.000
heavy alc. cons. **)	.0515	.1836	.779				
				Age * m			
chronic disease (weighted)	.2134	.0189	.000	25-34	-.4841	.1783	.007
				35-44	-.3393	.1844	.066
Age				45-54	-.2351	.2111	.265
25-34	.1378	.1134	.224	55-64	.0944	.2443	.699
35-44	-.1321	.1170	.259	65-74	.1026	.2806	.715
45-54	-.2980	.1333	.025				
55-64	-.6018	.1516	.000	male * m	.0069	.1193	.954
65-74	-.9552	.1789	.000				
				low time press. * m	-.2405	.1829	.189
male	-.6616	.0744	.000	high time press. * m	-.0385	.1564	.806
questionnaire (method)	.5341	.2006	.008				

*) Logistic regression with indicator coding, reference categories: GHQ: 0; interest in health matters: neutral; education: intermediate; time pressure: intermediate; smoking: never smoked; alcohol consumption: abstainer; age: 15-24 yrs; sex: female. The number of chronic diseases is a numerical variable; severity is weighted in 3 categories ref. Appendix 1.

**) Heavy alc. cons.: ♂ 4 glasses alcohol or more every day or 5 glasses alcohol or more almost every day
♀ 3 glasses alcohol or more every day or 4 glasses alcohol or more almost every day
Abstainer: no alcohol consumption during past 6 months
Light/moderate alc. consumption of alcohol during past 6 months but less than heavy drinker

Table 5. The occurrence of one or more days with complaints related to psychological distress or musculo-skeletal complaints in the questionnaire and in the health diaries. Dutch Survey of General Practice N=8760; ages 15-74 yrs.

Health Complaint	questionnaire checklist	health diary open-ended question
complaints rel. psychological distress	59 %	32 %
musculo-skeletal complaints	38 %	20 %

Table 6. Logistic regression of the probability of having psychological symptoms in 14 days, recorded in either health diaries or during an interview with a retrospective questionnaire. *) Data from Dutch National Survey of General Practice (n=7993; ages: 15-74 years)

Indepent variables main effects	Regr. coeff.	Standard error	P-value	Independent variables interaction with method (m)	Regr. coeff.	Standard error	P-value
GHQ				GHQ * m			
1-2	.2625	.0905	.004	1-2	.7473	.1271	.000
3-4	.4025	.1420	.005	3-4	1.1882	.2202	.000
≥ 5	.9638	.1117	.000	≥ 5	1.3534	.2102	.000
not interested	-1.4641	.5376	.007	not interested * m	1.0829	.6439	.093
interested	.0839	.0738	.256	interested * m	-.1286	.1045	.218
lower education	-.2770	.0863	.001	lower education * m	.2208	.1216	.069
higher education	.3497	.0974	.000	higher education * m	-.1837	.1394	.188
low time pressure	-.1455	.1173	.215	former smoker * m	.0089	.1395	.949
high time pressure	.0914	.1004	.362	light smoker * m	.3303	.1624	.042
				moderate smoker * m	.2115	.1587	.183
former smoker	.0837	.0977	.392	heavy smoker * m	.3629	.1878	.053
light smoker (≤ 10 c/d)	-.0976	.1139	.392				
moderate smoker (11 - 20 c/d)	-.0226	.1144	.843	light/mod alc. * m	.2270	.1334	.089
heavy smoker (≥ 20 c/d)	.0032	.1308	.980	heavy alc. * m	.1829	.2739	.504
light/mod alc. cons.	-.0283	.0921	.759	chronic disease * m	.1162	.0259	.000
heavy alc. cons. **)	.0168	.1936	.931				
				Age * m			
chronic disease (weighted)	.1171	.0161	.000	25-34	-.2310	.1592	.147
				35-44	-.1523	.1677	.364
Age				45-54	-.0603	.1928	.755
25-34	.1658	.1119	.139	55-64	.1266	.2245	.573
35-44	.0065	.1191	.957	65-74	.0753	.2708	.781
45-54	-.1344	.1367	.325				
55-64	-.2913	.1601	.069	male * m	-.0030	.1073	.978
65-74	-.7920	.1975	.000				
				low time press. * m	.0415	.1652	.802
male	-.8503	.0756	.000	high time press. * m	-.1937	.1431	.176
questionnaire (method)	.5530	.1849	.003				

*) Logistic regression with indicator coding, reference categories: GHQ: 0; interest in health matters: neutral; education: intermediate; time pressure: intermediate; smoking: never smoked; alcohol consumption: abstainer; age: 15-24 yrs; sex: female. The number of chronic diseases is a numerical variable; severity is weighted in 3 categories ref. Appendix 1.

**) Heavy alc. cons. : ♂ 4 glasses alcohol or more every day or 5 glasses alcohol or more almost every day
♀ 3 glasses alcohol or more every day or 4 glasses alcohol or more almost every day
Abstainer: no alcohol consumption during past 6 months
Light/moderate alc : consumption of alcohol during past 6 months but less than heavy drinker

Table 7. Logistic regression of the probablity of having musculo-skeletal symptoms in 14 days, recorded in either health diaries or during an interview with a retrospective questionnaire. *)
Data from Dutch National Survey of General Practice (n=7993; ages: 15-74 years)

Indepent variable main effects	Regr. coeff.	Standard error	P-value	Independent variables Interaction with method (m)	Regr. coeff.	Standard error	P-value
GHQ				GHQ * m			
1-2	.3259	.1008	.001	1-2	.1023	.1334	.443
3-4	.2792	.1616	.084	3-4	.1904	.2127	.371
≥ 5	.5562	.1214	.000	≥ 5	.2444	.1659	.141
not interested	-1.1369	.5955	.056	not interested * m	-.0753	.7405	.919
interested	.0019	.0831	.982	interested * m	-.0199	.1104	.857
lower education	-.0625	.0968	.519	lower education * m	.1568	.1280	.221
higher education	.0795	.1147	.489	higher education * m	-.1831	.1517	.228
low time pressure	-.0254	.1256	.840	former smoker * m	-.0235	.1478	.874
high time pressure	-.3107	.1198	.010	light smoker * m	.3593	.1726	.037
				moderate smoker * m	.0304	.1663	.855
former smoker	.1666	.1099	.130	heavy smoker * m	.2893	.1962	.140
light smoker (≤ 10 c/d)	-.0284	.1318	.829				
moderate smoker (11 - 20 c/d)	.1503	.1269	.236	light/mod alc. * m	.0882	.1406	.530
heavy smoker (≥ 20 c/d)	.0129	.1484	.931	heavy alc. * m	.4175	.2860	.144
light/mod alc. cons.	.0522	.1044	.617	chronic disease * m	.1399	.0248	.000
heavy alc. cons. **)	-.0570	.2172	.793				
				Age * m			
chronic disease (weighted)	.1461	.0166	.000	25-34	-.1629	.1758	.354
				35-44	-.2434	.1830	.184
Age				45-54	-.2491	.2020	.218
25-34	.1956	.1354	.149	55-64	.1503	.2353	.523
35-44	.2834	.1403	.043	65-74	.0275	.2766	.921
45-54	.5318	.1522	.001				
55-64	.1302	.1793	.468	male * m	-.0940	.1131	.406
65-74	-.0489	.2093	.815				
				low time press. * m	-.0380	.1675	.820
male	-.1625	.0852	.056	high time press. * m	.3282	.1562	.036
questionnaire (method)	.5128	.2062	.013				

*) Logistic regression with indicator coding, reference categories: GHQ: 0; interest in health matters: neutral; education: intermediate; time pressure: intermediate; smoking: never smoked; alcohol consumption: abstainer; age: 15-24 yrs; sex: female. The number of chronic diseases is a numerical variable; severity is weighted in 3 categories ref. Appendix 1.

**) Heavy alc.: ♂ 4 glasses alcohol or more every day or 5 glasses alcohol or more almost every day
♀ 3 glasses alcohol or more every day or 4 glasses alcohol or more almost every day
Abstainer: no alcohol consumption during past 6 months
Light/moderate alc: consumption of alcohol during past 6 months but less than heavy drinker

Figure 1. Expected Probability of health complaints on checklist or in health diary (effect of distress)

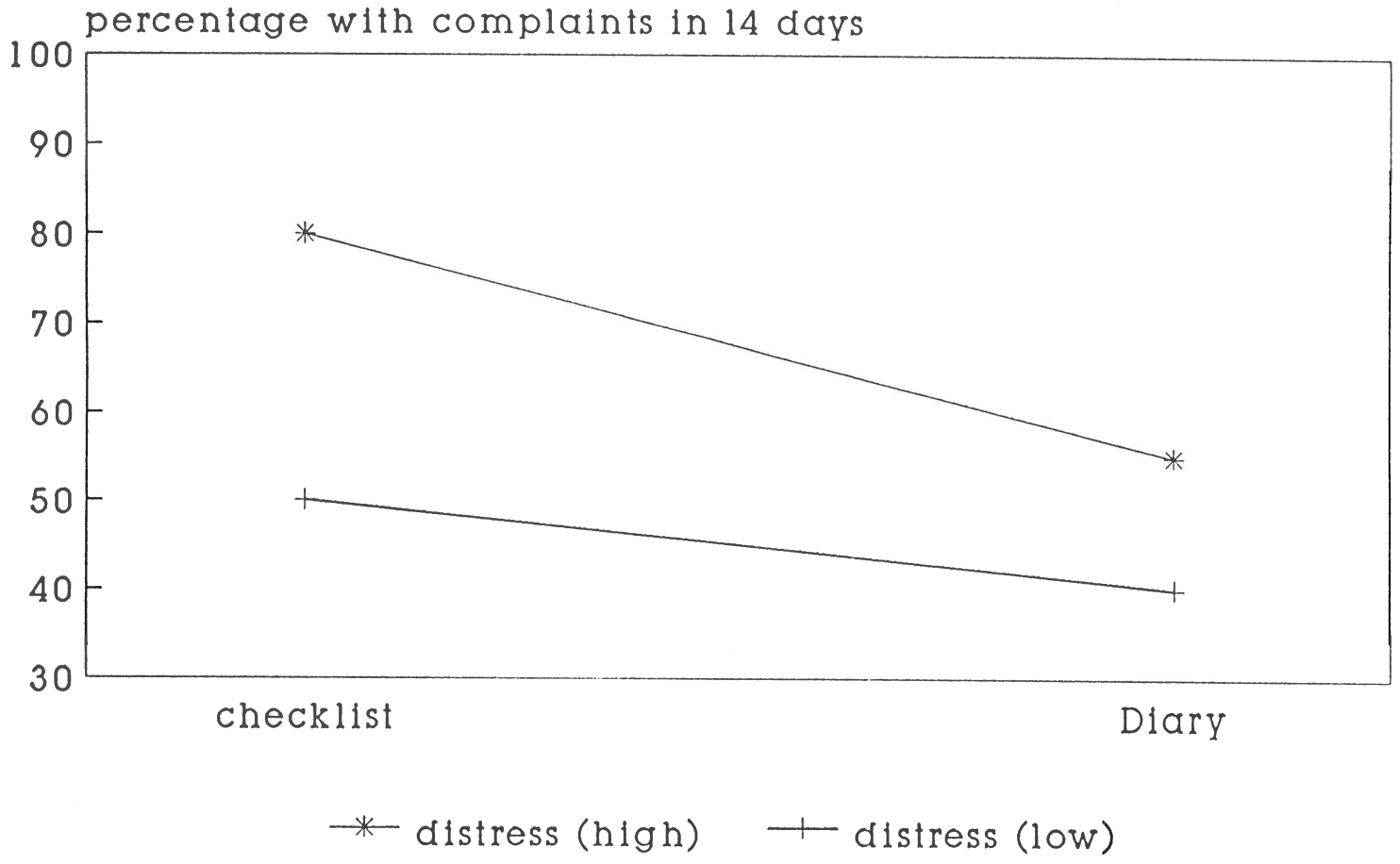
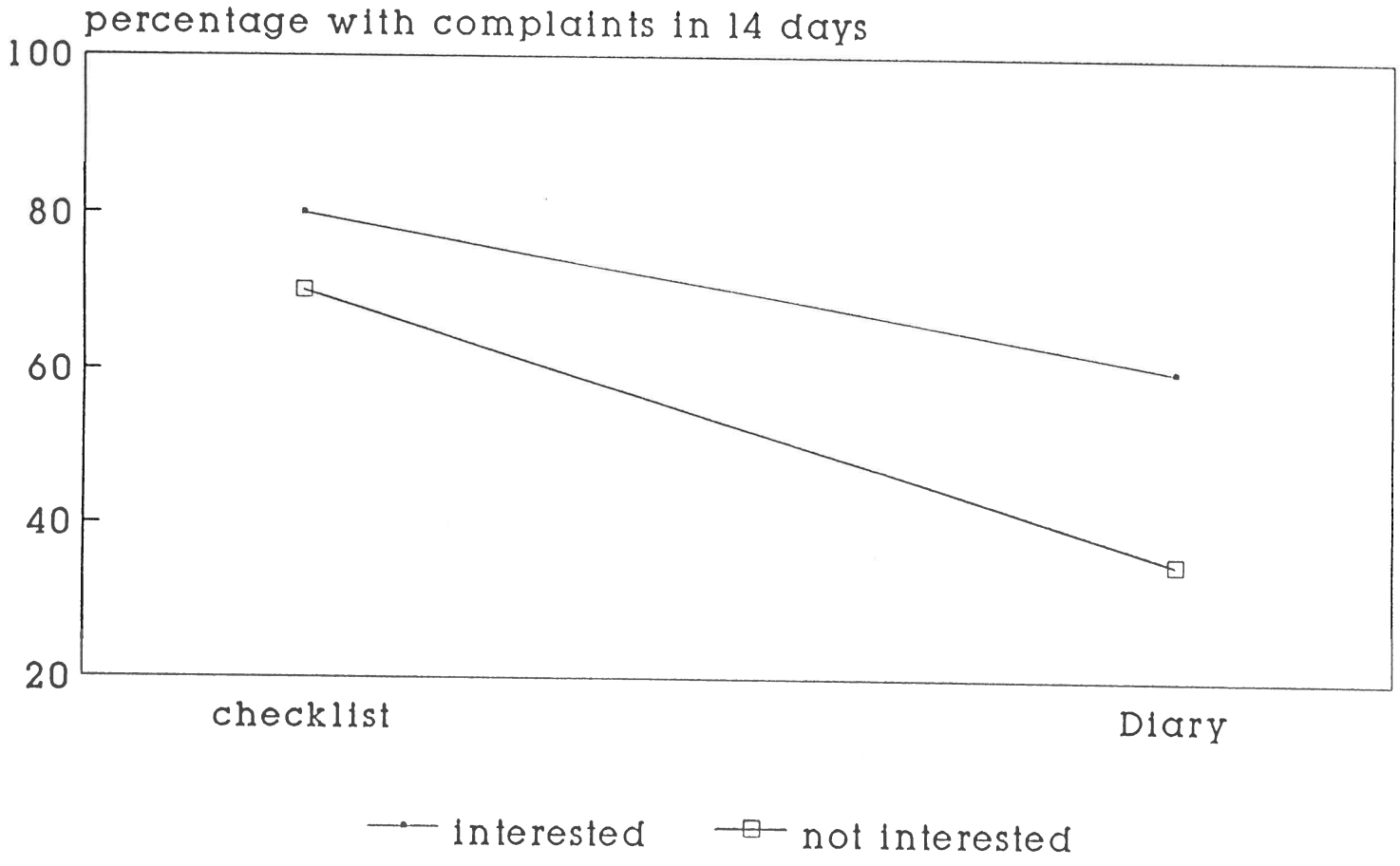


Figure 2. Expected probability of health complaints on checklist or in health diary (effect of interest)



Appendix. Variables in the Dutch Survey of General Practice used in this paper.

1. Checklist of complaints experienced in the 14 days prior to the interview [1]:

dizziness, headache, fever, fatigue, nervousness, insomnia, general weakness, aggressiveness (frustration), unbalanced nerves, extreme perspiration, soar throat, ear pain, buzzing in the ear, hearing problems, nasal congestion, nose bleeding, cough, palpitations, swollen ankles, nausea, chest ache, vomiting, diarrhoea, heartburn, stomach ache, cramps, constipation, gaining weight, eating disorders, toothache, painful urination, incontinence, menstrual problems, complaints about neck shoulder or hip, back pain, complaints about limps, problems at work, family problems, problems with contraception.

In this paper the following subdivisions are made for separate analysis:

1.a. complaints related to psychological distress:
dizziness, headache, fatigue, nervousness, insomnia, general weakness, aggressiveness (frustration), unbalanced nerves, extreme perspiration

1.b. musculo-skeletal complaints
complaints about neck shoulder or hip, back pain, complaints about limps

2. Checklist with chronic conditions [2]:

2.1. not very limiting or severe (weight=1):	hayfever, haemorrhoids, varicose veins, eczema nervousness, allergy, migraine
2.2. moderately limiting or severe (weight=2):	hypertension, ulcis cruris, chronic back pain, rheumatism, migraine, stomach and bowel problems, bile and liver diseases, diseases of thyroid gland, disorders of eye or ear, disorders of the joints prostate problems (♂ only), menstrual problems (♀ only).
2.3. limiting or more severe (weight=3):	bronchitis or asthma, heart problems, arteriosclerosis, cancer, diseases of nervous system (e.g. epilepsy), diabetes, diseases of the kidney, lasting consequence of an accident, hereditary handicap.

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1. The current health problems in this checklist are described in the terms that a lay person would use. The translation into English is intended to remain as close to the Dutch wording as possible. It is inevitable that divergences exists between the Dutch and English lay persons terminology of health complaints.

2. Most of the chronic conditions on the checklist are also formulated in the lay persons terminology. Occasionally a medical term has been used (which is translated into English for this paper) when it may be assumed that this term is very common. The rating of severity of chronic conditions is bases on a paper from Van den Berg & Van den Bos (1989) with some minor alterations.

3. Health diary:

Q: Did you have any complaints about your health today?

Respondents who answered 'yes' were asked to mention their complaints in their own words, with a maximum of two complaints on each day in separate boxes. When experiencing more than two complaints they were asked to mention the two most important complaints. Related complaints (e.g. coughing, sneezing, fever) should be entered together in one box. The respondents were allowed to use their own words. They used terminology that could be related to both symptoms and diagnosis.

Complaints were coded in 97 categories. The coding scheme was based on ICPC chapters. This scheme was also used in the questionnaire to assess reasons for encounter with the GP, as reported by the patient. In this paper the following subdivisions are made for separate analysis (category in parenthesis):

3.a. complaints related to psychological distress:
(57) fatigue, insomnia, nervousness; (58) dizziness, vertigo; (59) headache, migraine
(89) depression, other psychiatric complaints.

3.b. musculo-skeletal complaints
(49) backpain; (50) joints; (51) muscles; (52) sprain, lacerations; (54) fractures;
(55) bruises; (61) neck; (62) shoulder; (63) arm, hand, finger; (66) leg, foot, ankle
(85) bone; (87) surgery of the back; (88) surgery of the limbs.

4. Goldberg's General Health Questionnaire

The 30-item version was used which was translated in Dutch.
(0) no items marked, (1) 1-2 items marked, (2) 3-4 items marked (3) 5 or more items marked

5. BIOgraphic PROblem list
This list contains 22 problems. Respondents could answer with yes, no or does not apply.
Problem list: financial, housing, parents, education, job, ageing, partner or marital problems, children, other relationships, establishing relationships, sexual, religious, self-development, self-image, worry about the future, abuse of alcohol, medicine, illegal drugs, loneliness, societal change, neighbourhood, leisure time, worry (in general), other problems.
(0) no items marked, (1) 1-2 items marked, (2) 3-4 items marked (3) 5 or more items marked

6. Lifestyle

Smoking: (0) never-smoked, (1) former smoker, (2) light smoker: $\leq$ 10 cigarettes daily, (3) moderate smoker: 11-20 cigarettes daily,(4) heavy smoker: $\geq$ 21 cigarettes daily.

Alcohol consumption: (0) abstainers: no alcohol during the past 6 months,(1) moderate or light alcohol consumption: drinking alcohol during the past 6 months but less then heavy.(2) heavy drinking: ♂ $\geq$ 4 glasses daily or $\geq$ 5 glasses almost every day, ♀ $\geq$ 3 glasses every day or $\geq$ 4 glasses almost every day.

7. Education
Highest attained educational level (not necessary completed). (0) intermediate general education or vocational training (o-level), (1) primary school only or lower vocational level (2) secondary education (a-level) or higher vocational training or university

8. Demographic variables

sex: (0) female, (1) male;

age: (0) 15-24 yrs, (1) 25-44 yrs, (2) 45-64 yrs, (3) 65-79 yrs

9. Role and time constraints

♂ (0) intermediate = default; (1) low time pressure: unemployed, (disability)pensioner, housekeeping

(2) heavy time pressure: self-employed / working at managerial level / head of a one-parent family combined with paid employment or enrolment in full-time education

♀ (0 intermediate = default; (1) low time pressure: unemployed, (disability)pensioner, housekeeping

(2) heavy time pressure: self-employed / working at managerial level / head of a one-parent family combined with paid employment or enrolment in full-time education / combining work and housekeeping in a family with children

10. Interest in health matters

Interest of the respondent in topics discussed in the health interview (as rated by the interviewer): (0) neutral, (1) not interested, (2) interested.

The relationship between health and illness behaviour: What is the role of cognitive dissonance reduction in the assessment and self care for common symptoms of ill health ?

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2. A theoretical framework: cognitive dissonance

What may we expect of the effect of health habits on illness behaviour? First of all, there is ample evidence that the health risks of smoking, excessive drinking, no exercise and a poor diet are well known to the population at large (O'Looney and Harding 1982; Harding and Kristiansen 1986). Health promotion campaigns have certainly increased the awareness of the risks of poor health habits. A recent British survey showed that those with the relevant unhealthy behaviour are most conscious of the links of these habits with disease (Blaxter, 1990). This is a remarkable finding that is not confirmed in other studies, which are mentioned below. Despite the widespread awareness of the dangers involved, many people are not able or willing to alter their lifestyle and a conflict between cognition and behaviour arises. In similar situations the theory of cognitive dissonance has often been very helpful in explaining which strategies individuals employ to resolve this conflict (Festinger, 1957). After its original formulation by Leon Festinger in the late 1950s subsequent refinements of the theory have been made. Aronson demonstrated that dissonance theory applies in particular when people engage in behaviour that violates their self-concepts (Dickerson et al, 1992). In an economic application of dissonance theory, Akerlof put it nicely: *'Most cognitive dissonance reactions stem from peoples' view of themselves as "smart nice people". Information that conflicts with this image tends to be ignored, rejected or accommodated by changes in other beliefs'* (Akerlof, 1984). With respect to health risks this theory has for instance been successful in explaining why safety measures on the workplace are not observed (Akerlof, 1984).

The presence of a conflict between cognition and behaviour causes discomfort which the individual will seek to reduce. Apart from giving up hazardous habits, there are several strategies that individuals may employ. One way of dissonance reduction would

be to belittle the importance of health. In the development of our argument we assume that people express the importance of health to them by taking an interest in health matters. In a study on social ties and health behaviour, Hibbard demonstrated that people who smoke or drink excessively, are less interested in health matters whereas people who had preventive visits to their physician showed a keener interest in health (Hibbard, 1988). Smokers or excessive drinkers frequently say that they prefer a short life full of pleasure over a long but boring life, equating a healthy lifestyle to boredom[1]. The immediate gratification of smoking and excessive alcohol consumption is often valued over future health risks. Several studies suggest that smokers appear to be more risk taking than non-smokers and are less oriented towards the future (Jenks, 1992; Farrell & Fuchs, 1982).

Another way of resolving this conflict between cognition and behaviour would be the denial of susceptibility to diseases which are known to be related to an unhealthy lifestyle. The denial of susceptibility may be both in general terms and/or related to the individual. Empirical studies support the existence of this dissonance reduction strategy. Smokers rated the health risks of the average smoker lower than nonsmokers did. They also rated their own health risks lower than the health risks of the average smoker (Lee, 1989; Harding & Kristiansen, 1982; Brownson, Jackson-Thompson, Wilkerson et al., 1992). Similar results have been found with respect to alcohol abuse (Hansen, Raynor, Wolkenstein, 1991). It is very likely that this reduction strategy does not only apply to attitudes about health risks but also extends to the appraisal and self care for the symptoms of ill health that the individual experiences. We will address this question in the empirical part of our paper.

The simple denial or misreporting of the hazardous behaviour is another strategy of dissonance reduction, which is, for several reasons, more likely to occur for the

presence of daily symptoms in the health diaries differed considerably from the ratings of symptoms obtained with an extensive checklist in a face-to-face interview (Kooiker & Foets, forthcoming). Complaining 'on request' in the interview produced more symptoms than the open-ended questions in the health diaries. The interview data showed a stronger association of hazardous health habits with the occurrence of symptoms, in particular among smokers. Most likely, smokers did simply not consider some of the bodily experiences that result from their habit to be worth mentioning in the diary as symptoms of ill-health, having accepted them as part of their every day life. When questioned about particular symptoms one-by-one with a checklist, they were ready to acknowledge these bodily experiences as symptoms or complaints.

When people with an unhealthy lifestyle experience symptoms they could reduce dissonance by telling themselves not to worry about it: the symptoms will disappear on their own and are not to be considered the tell-taling signs of a lifestyle related disease. Along with learning not to pay attention to bodily sensations, they have learned to minimise the worry that symptoms induce.

We may also expect that people who have adopted habits that are considered unhealthy are less likely to share their experience of symptoms with others, avoiding unwanted criticism of their lifestyle. Keeping these experiences to themselves reduces dissonance. This assumption relates to the setting of our health interviews. In about half of these conversations the interviewer was alone with the respondent. We may assume that respondents are in general more likely to report symptoms in these private conversations, than in interviews held in the presence of their spouse, friends or family. With regard to dissonance reduction we expect that the presence or absence of others makes more difference for respondents with one or more hazardous habits than for other respondents. We expect that an unhealthy lifestyle comes with

more inhibition to report symptoms.

The course of illness behaviour starts with the awareness of symptoms and the readiness to acknowledge them to oneself and others. The next step consists of finding a remedy to alleviate these symptoms. Very often people consult their friends or family for advice on what to do, before seeking professional help (Freidson, 1970). They may also acquire information on their illness or on remedies from books or magazines. All of these behaviours deal with processing information, which is a crucial aspect in the development and reduction of cognitive dissonance (Kotler, 1988). Having more information is, in the case of health and lifestyle, very likely to increase dissonance. Consequently, people with an unhealthy lifestyle are less likely to seek information from others or from the media on the nature of their illness or consult professionals for advice to alleviate their complaints. Medical care utilization data of a HMO programme in the U.S. have shown that smoking and frequent drinking are negatively associated with medical care utilization: smokers and drinkers had slightly less contacts with the HMO programme than nonsmokers or people who drink less frequently (Pope, 1982).

On the other hand, people who maintain a healthy lifestyle are first of all expected to be much more keen on health matters. When they experience symptoms they are more likely to develop some kind of illness behaviour which does not deny the presence of symptoms, but instead talk about their complaints or read about it and, when dealing with signs of more serious disorders, consult a professional like, for instance a General Practitioner (GP).

On the basis of these notions we may now formulate four hypotheses which will be subsequently tested with material from the Dutch National Survey of General Practice

(Foets et. al., 1992).

Individuals with one or more hazardous health habits will:

1. be less interested in health matters
2. worry less about the complaints they experience
3. report fewer health complaints in the presence of others
4. be less inclined to seek information on the nature of their complaints

Our finding that respondents with an unhealthy lifestyle are less likely to report symptoms in a three week's health diary than during a health interview with an extensive checklist of common symptoms, is important for our ideas about dissonance reduction, but cannot be used as a hypothesis in the present analysis.

In this paper we examine the relationships between illness behaviour and four unhealthy habits: smoking, excessive alcohol consumption, poor diet and lack of exercise. Although each of those habits is considered unhealthy, the degree of induced dissonance may vary. Dissonance is most likely to occur when social pressure to alter an unhealthy habit is very strong. It may be expected that the social pressure to quit smoking is stronger than the social pressure to change any of the other unhealthy habits. The campaign against smoking has been very successful in disseminating knowledge about the health risks involved. In most western countries, including the Netherlands, packages of cigarettes contain a warning about the detrimental effects of smoking on health. Nowadays it is almost impossible to avoid information on the health risks of smoking. As a result, the percentage of smokers has dropped rapidly in the Netherlands, in particular among males. Campaigns to change other health habits appear to be less successful (Stuurgroep Toekomstscenario's Gezondheidszorg, 1990). To the public the connection of either drinking, poor diet or lack of exercise with

health risks seems to much less salient than the connection of smoking and lung cancer. It can be assumed therefore that the dissonant behaviour is more strongly related to smoking than to other aspects of lifestyle.

Smoking is also the best covered aspect of lifestyle in our data. We can distinguish between past and current smokers and make assumptions about the behaviour of each group. Those who quit smoking more than 5 years ago are expected to resemble non-smokers; they have adjusted to a life without their habit[2]. Those who quit more recently are probably still in the process of cycling between cessation and relapse (U.S. Dep. of Health, 1990). They are on average experiencing more complaints than non-smokers, former smokers who quit more than five years ago or those who still smoke (Blaxter, 1990). There is no reason to react to those complaints with dissonance however. We may expect that those who quit recently display more illness behaviour than those who still smoke or quit many years ago.

It seems self evident that the appraisal of symptoms and the ensuing illness action will to a large extend be determined by other factors than lifestyle. More often than not will lifestyle issues account for a minor part of the illness behaviour. The response to symptoms will primarily be determined by the frequency of their occurrence, the perceived seriousness of these symptoms, the extend to which they disrupt family, work and other social activities, the respondent's previous experiences with these symptoms, cultural differences and the inclination of the individual to seek care (Mechanic, 1978). It is important to note that due to widespread insurance coverage for the expenses of medical care and a high density of medical facilities with easy access, financial and other structural aspects are of minor importance in the Netherlands. We may conclude that a reliable picture of the effect of lifestyle on illness behaviour can only be obtained after controlling for these other determinants.

4. Material and methods

Our study consists of a secondary analysis of data from the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 practices using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables. A random sample of 100 patients of each General Practitioner was approached for a health interview and asked to keep a structured health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The patients were approached with a letter from the GP at their home address. The sample was not limited to patients who had recently visited the surgery or are currently undergoing treatment; also patients who had not seen their GP for a long time were approached. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (Total N = 11038; Foets, Velden, Bakker, 1992).

We restricted our analyses to respondents within the age range of 25 up to 64 years. There were several reasons to do so. Firstly, the response rate for the diaries dropped significantly among the elderly of 65 years and over. Secondly, the elderly are not expected to be under the same pressure as younger age groups to change their habits. Finally, younger age groups are excluded because our analysis takes the smoking history of the respondents in account. Naturally, young respondents have had a very short smoking history.

In the previous section we developed the hypotheses which will be tested with the data mentioned above. The survey provides the information on lifestyle, health status and background variables like sex, age, employment status etc (ref. the Appendix for

a complete list of variables). After completion of the questionnaire the interviewers were asked to rate the interest of the respondent in the topics that were discussed. Our data do not allow us to assess directly the value that the respondents place on health, taking an interest in health matters has to serve as a proxy variable. The interviewer also wrote down who beside the respondent was present during the interview. With this information we can test the first hypothesis on interest in health matters and the third hypothesis on the presence of others during the interview. The other hypotheses will be tested with the material from the health diary. Health diaries have proven to be particularly useful for the recording of complaints of low impact and individual differences in illness behaviour (Verbrugge, 1980). In this study the health diary consists of a 21 paged booklet with a simple one-page questionnaire to be completed each day. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words. Then a series of precoded questions followed on the assessment of these complaints (new/existing, self limiting, worrying etc) and the illness action prompted by the complaint on that day. For both complaints 16 different actions could be listed, ranging from doing nothing, read or talk about the complaint, to consulting a GP[3]. The assessments 'self-limiting' and 'worrying' are used to test the second hypothesis. The last hypothesis was tested with three types of illness behaviour which deal with information processing: (1) talking to others about the complaint, (2) reading about the compliant in a book or magazine, (3) consulting a GP. In our analyses, we assume that dissonance reduction through the appraisal of complaints and illness action is a learned behaviour which does not only relate to the obvious lifestyle related complaints but spills over to illness behaviour for a wide range of daily symptoms. We therefore did not tie our analyses down to very specific symptoms.

During the interview the respondents were asked about three aspects of health related behaviour: their alcohol and tobacco consumption and if they actively engage in sports. We distinguish three levels of drinking: abstaining, light or moderate drinking and excessive drinking. Abstainers are those who reported no alcohol consumption during the previous six months. The data we are using offer information on the frequency of alcohol consumption during the week and the daily number of glasses. Excessive drinking was defined as follows: for men we considered '4 glasses or more every day' or '5 glasses or more almost every day' as excessive drinking. For women we used lower levels: '3 glasses or more every day' or '4 glasses or more almost every day'. This definition is based on another Dutch study on health related behaviour which considered more than 28 glasses for men and for women more than 21 glasses in a week a health risk (Bruin, 1992). This other Dutch study derived its definition of excessive drinking from recommendations of the Royal College of General Practitioners. In our analysis we do not distinguish ex-drinkers from other abstainers since only very few respondents (♂=31;♀=18) declared themselves to be ex-problem drinkers according to the definition mentioned above. The variables on smoking consider both smoking history as well as the present amount of cigarettes (or cigars, pipes) that are smoked daily. Ex-smokers fall in two categories: those who quit more than 5 years ago and those who quit five years or less. The respondents were not directly asked about their diet but instead asked about their length and weight with which the Body Mass Index (BMI) can be established. In our analyses the BMI has to serve as a proxy to dietary habits. Finally the respondents were asked if they actively engage in sports or not. We considered no engagement as a health risk. Our data do not allow us to include other types of (leisure time) exercise.

We stated before that a fair idea of the influence of lifestyle on illness behaviour can only be obtained when other determinants of the assessment of complaints and illness

actions are controlled for. It may be expected that men and women assess health complaints differently and that 'lifestyle' has differential effects for men and women (Gijsbers van Wijk & Van Vliet, 1989). The analyses were therefore carried out for men and women separately.

Also age, the number of chronic conditions (as an indication of overall health) and the number of days with complaints within the dairy keeping period are obvious determinants of illness behaviour. In addition we controlled for the level of education, living arrangement (alone or with others) and role obligations (fixed = employed or enroled in full time education; not fixed = unemployed or housekeeping or (disability)pensioner) and included interactions of role obligations and living arrangement with age. Finally we included the score on Golberg's Health Questionnaire as an indicator of psychological distress or neuroticism, because previous research has shown that neuroticism is an important determinant of illness behaviour and care seeking (Westhead, 1985; Furer & Persoon, 1989).

5. Statistical Analysis

The data were first examine bivariately, after which multivariate methods were used in order to include the necessary control variables.

Two hypotheses use the survey data only. One of them concerns the interest in health matters. In this analysis the control variables consisted of: age and level of education, with separate analyses for men and women. Education was used as the only control variable since it was expected to be the largest determinant of interest in health matters and other controls seemed of minor importance. The variables pertaining to lifestyle were entered as dummy variables. The response variable 'interest' has three values: 1. showing interest (58 % of the respondents); 2. showing a neutral attitude towards the topics discussed (40 %) and 3. showing indifference towards health matters (2 %). Very few respondents displayed outright indifference towards the topics discussed in the interview. Two regressions for dichotomous dependent variables were carried out: (1) showing interest versus the two other categories combined and (2) lack of interest versus interest and a neutral attitude combined. The second analysis is necessary to describe the small group of respondents showing explicit indifference.

The other hypothesis which is tested with the survey data, concerns the reporting of complaints in the presence of others. In a multivariate analysis we used the number of reported acute symptoms over the past 14 days (a checklist described in the Appendix) as the response variable, with the presence or absence of others and lifestyle characteristics as the predictors of central interest. In an Analysis of Variance, age was inserted as a covariate and sex and living arrangement as additional factors. The lifestyle characteristics were added together in a index variable indicating the

number of unhealthy habits[4]. In this analysis our main focus is the interaction between the index variable of lifestyle characteristics and the presence or absence of others during the interview. For this reason were the two-way interactions included as well.

The remaining hypotheses were tested with a combination of the survey data and the data from the health diaries. The multivariate analyses were carried out with the diary data in aggregated form. This means that the 21 daily records were combined in a single record for each respondent. The aggregated file contains information on the number of days with health complaints, the number of days with a particular assessment of the complaint and the illness action on days with complaints.

In the multiple regressions (OLS) the percentage of complaint days with a certain assessment or illness action served as dependent variable. Lifestyle characteristics and control variables were inserted simultaneously as independent variables. Lifestyle characteristics, role obligations, and living arrangement were entered as dummy variables whereas age, education, the number of chronic conditions, the number of days with complaints in the diary and the level of psychological distress were entered as numerical variables.

In the analyses of illness action also the assessment variables were entered as predictors. These are the percentages of the complaint days in the diary that the complaints were assessed as new or unknown, lasting for more than one year, assessed as troubling or irritating, reason for worry, self limiting or known why occurring.

In the analysis of the percentage of complaint days that people talk or read about the complaint a multiple regression (OLS) was used, whereas visiting a GP was treated as

a dichotomous response variable. With a logistic regression we estimated which factors have an influence on the likelihood of visiting a GP at least once on one or more days with complaints within the three week period of the diary study. All of these analyses were conducted with two-sided statistical test, thereby allowing for inferences in the direction contrary to our hypothesis as well (Altman, 1991).

The use of percentages as a response variable may cause two statistical problems in the OLS regression analysis: the assumption of constant variance across X-values (this applies in particular to the number of days with complaints as predictor) and the assumption of a normal distribution of the residuals are likely to be violated. Originally the response variable is binary: on any given day individuals can either do or not do a certain action. In aggregated from we are dealing with proportions or percentages. For respondents who experience only one day with a complaint (17%) the aggregated variable equals the original dichotomous variable but as the number of days with complaints increases the percentage becomes a continuous variable with approximately normal distributed values. Log-odds and arcsine transformations of the response variable were used to cope with both heteroscedasticity and non-normality (Fox, 1991; Weisberg, 1980)

6. Results

The first hypothesis assumes that people who smoke, are overweight, drink excessively or do not exercise regularly are less interested in health matters than those who refrain from these unhealthy habits. Tabulations of each of these habits for men and women separately and two age groups (25-44 yrs/45-64 yrs) showed only one significant effect: among men in the younger age group the interest in health matters declines rapidly with an increase in the number of cigarettes smoked ($Chi^2 = 19.7$; df 10; $p < .05$).

Very likely other factors beside lifestyle have an important effect on showing either interest or indifference towards health. In particular a higher education may account for taking an increased interest. Unhealthy behaviour is more often found among those with a lower than among those with a higher education (Bruin, 1992). Education is therefore a confounder in the relationship of health habits and interest in health. In logistic regressions for both men and women, age and education were inserted in the model alongside the variables pertaining to health habits. The results of these analyses are shown in the table below.

Table 1. Interest in health. Logistic regression with 'interested' and 'not interested in health' as dependent variables.

This table clearly shows that education is the best predictor of taking an interest in health matters. In the equations shown above, there are no significant effects ($p < .05$) of health habits on either interest or indifference towards the health matters that were discussed during the health interview. Close inspection of the equation on being 'not interested' shows some large b-coefficients, indicating large effects. These effects

were however accompanied by large standard errors rendering the effect statistically insignificant. Among men, former smokers seem to show less indifference than non-smokers (Odds-Ratio = 0.68 [5]; p = 0.42), whereas heavy drinkers (OR = 2.55; p = 0.08) and those with moderate or heavy overweight (OR = 1.77; p = 0.22) seem to show more indifference. Among women, indifference seems to go with 'no exercise' (OR = 2.07; p = 0.05), light smoking (OR = 2.04; p = 0.09) and heavy smoking (OR = 2.21; p = 0.09). Contrary to our expectations however, higher levels of indifference go with underweight (OR = 0.41; p = 0.23) or heavy drinking (OR = 0.50; p = 0.51).

The other hypothesis that was tested with the survey data assumes that respondents who were interviewed with others present during the interview, would be more reluctant to mention health complaints than those who have had a private conversation with the interviewer. On top of that we assumed that this relationship holds even more so for those with an unhealthy lifestyle. Our data showed that it is generally true that those who have had a private conversation with the interviewer reported more complaints. However, this relationship was not significant in the ANOVA when the type of living arrangement was inserted as a control variable. There was also no significant interaction of the presence of others during the interview and the number of unhealthy habits[6].

The two remaining hypotheses are dealing with the reactions of individuals to health complaints and the actions that people undertake to alleviate complaints. Before presenting our analyses, we provide some descriptive statistics on the occurrence of symptoms, assessments and illness behaviour.

In a three week period 62% of the men and 75% of the women in the ages between

25 and 65 experienced health complaints. The graph below shows that most complaints do not last long, although there is a substantive percentage of both men and women who had complaints on each day of the diary keeping period. Elsewhere we present details on the nature of these complaints. The most frequently mentioned symptoms are: headache, fatigue, common cold or flu, back pain and stomach ache or bowel complaints (Kooiker & Foets, forthcoming).

Fig. 1. Number of days with complaints in a period of three weeks.

The assessment of complaints and the illness action depends to a large extend on the duration of the complaint or the frequency of its recurrence. In the next table we compare those who had only one day with complaints, to respondents who had complaints for 2-6 days or on seven days or more. Those who had only one day with complaints within three weeks usually considered these complaints to be self-limiting and no reason for worry.

Table 2. Assessment of health complaints (descriptive)

The typical response to these complaints was to do either nothing, take a rest and/or apply a home remedy or OTC medicine. Those who had complaints on seven days or more within the three week period responded rather differently. They worried a lot more about their complaints, had a much higher probability of contacting their GP within those three weeks and/or to take prescribed medicine[7].

Table 3. Illness Action (descriptive).

Previously we assumed that individuals with an unhealthy lifestyle are less inclined to worry about the health complaints which they experience. We also expected that in particular smoking is likely to cause dissonance which could be reduced by taking a lenient attitude towards symptoms of ill-health. In bivariate tabulations of the variables pertaining to lifestyle and the assessment in the health diary of daily complaints, only smoking yielded results that are in line with our assumption. Male moderate smokers rated their health complaints almost as often to be 'self-limiting' as those who have never smoked did (ANOVA of smoking status: $F=5.1$; $df=5$; $p=0.0001$). Among women, light smokers stand out as having little worries about their every day health complaints. The ANOVA of smoking status was not significant however.

Fig. 2. Assessment of health complaints by smoking status

With a multiple regression the effect of all predictors on the assessment of health complaints was tested. The results are summarized in the table below[8].

Table 4. Regression of assessment of health complaints

These analyses show that lifestyle plays a relatively minor role in the assessments of health complaints: the number of days that complaints last, the number of pre-existing chronic conditions and the level of psychological distress are much more important. Former smokers who quit within the last five years considered their complaints to be less self-limiting (male) or more worrying (female). Again it seems that male moderate smokers and female light smokers are different from other categories. They do however not differ significantly from the reference category: those who never smoked.

Closely related to the assessment of complaints are the actions people undertake to alleviate symptoms, reduce worry etc. The handling of information is an important factor in cognitive dissonance theory and therefore we paid special attention to 'talking or reading about the complaint' and 'consulting a GP'. Assessments are strong predictors of actions, and in order to estimate the independent contribution of lifestyle, regressions were carried out with 'talking or reading' about the complaint and 'visiting a GP' as response variables, controlling for assessments. The percentage of days that people talk or read about the complaint is a combined category because of the small percentage of the days that respondents read about the nature of their ailments (ref. Table 3). Very small percentages are not suited as response variables in OLS regression (Cleary & Angel, 1984).

Table 5. Regression of illness action

The multiple regression shows that people talk or read about their health complaints when they are new, consider them bothering or a reason for worry. They are less likely to do so with complaints that are existing for over a year. The level of education and whether or not they live alone make surprisingly little difference to this behaviour. Older women and women with higher levels of psychological distress, talk or read more about complaints than others. This analysis also shows that smokers talk significantly less about their complaints than others do. Among women, smokers who quit more than five years ago also talk or read less about the complaints which they experience. The (few) women who drink excessively talk or read more about their complaints whereas men who drink alcohol seem less inclined to do so. The illness action model has a poorer overall fit than the assessment model that was discussed before.

The likelihood of visiting a GP on days with complaints within the three weeks that the health diary was kept is also largely determined by the assessments of complaints. Respondents with self-limiting complaints and those who experience symptoms of previously existing conditions are less likely to visit their GP. New and bothering complaints on the other hand are a reason for a consultation, especially when complaints last for several days. Women who live alone are, controlling for other factors, less likely to visit a GP. Neuroticism does not make much difference, after controlling for other factors. For both men and women, the number of days with complaints is the best predictor in this logistic regression[9]. Lifestyle issues do not add much to the probability of visiting a GP. Generally there is no significant contribution, with the exception that women who are mildly overweight are more likely to visit their GP than others. Women who drink excessively seem less likely to visit a GP, judging from the large b coefficient. These effect is not statistically significant however ($p = 0.09$).

7. Conclusions and discussion

Our analyses provide only limited support for our hypotheses about the effects of health behaviour on illness behaviour. People with an unhealthy lifestyle seem more indifferent towards health matters, but these effects were not significant at a 5% level. In the appraisal of daily symptoms of ill-health, male moderate smokers and female light smokers appear to be less troubled by their every day illness than the other respondents are. Again, these effects were not significant in a multivariate analysis. Also the reporting of complaints in the presence of others or visiting a GP in the period that the health diary was kept, was not significantly associated with a healthy or unhealthy lifestyle. After controlling for other factors, smokers do however talk less to others or read less about their health complaints in books or magazines. If their is any case for the dissonance reduction strategies in our data, it is for smokers who also were significantly less likely to report their health complaints in the health diary when we compared the diary data with the health interviews. This finding is in accordance with our assumption that smoking would provide the best example of a unhealthy habit leading to cognitive dissonance. We assumed that smokers would, more than other respondents, employ the reduction strategies that we hypothesized. But also for smokers would our case be more convincing if both male and female current smokers showed indifference towards health matters and also reported less complaints in the presence of others. The observation that in particular former smokers who quit within the last five years are troubled by their health complaints is in line with our theory. Also here would our case be more convincing when at the same time current smokers would worry considerable less about their complaints than non-smokers do.

Why is it that our hypotheses receive limited support?

First of all it is important to note that this paper is based on a secondary analysis,

which always has its shortcomings. Our data did for instance not contain information about the awareness of respondents of the health risks of their behaviour. The presence of cognitive dissonance could not be assessed directly. Also the measurement of hazardous health behaviour is not wholly adequate: our survey did not contain variables to measure dietary habits directly and our variable on exercise did not include exercise outside active sports participation (e.g. cycling to an from work). It was noted before that drinking behaviour is difficult to assess with a survey. In the end, smoking behaviour is the aspect of lifestyle best covered in our data, which may be part of the explanation for the significant effects that were found for smoking but not for other behaviours. A new analysis, preferable with longitudinal data and more precise measurements would probably lead to significant results, also for the other aspects of lifestyle.

Nevertheless, and this is our second reason, also with better data would the role of lifestyle in the appraisal of symptoms and illness action remain limited. Our analyses clearly demonstrated that the assessment of complaints and the ensuing illness action are dominated by other factors. The number of days with health complaints is the strongest predictor of the appraisal of symptoms. In turn, the assessment of complaints is the strongest predictor of illness action.

A third reason for the lack of support for our hypotheses is the assumption that people with an unhealthy lifestyle would reduce dissonance, if present, with other strategies. Some of these strategies were mentioned in the theoretical introduction. Again, more suitable data measuring both the presence of dissonance and various reduction strategies, is needed to verify this assumption.

The conclusion that people with a certain unhealthy habit are not avoiding contact

with their GP may be partly attributed to the workstyle of GPs in the Netherlands with respect to patient education and advice on hazardous related health habits. The Dutch GP is reluctant with advice and will only ask patients to change their lifestyle when their is an immediate concern to do so (Zee & Verhaak 1989; Broer et al, 1992).

Despite all of these shortcomings, our results are to a certain extend in line with dissonance theory. Dissonance and its reduction, are likely to occur for health habits of which the risks are well known to the population at large. For our data smoking is the best example of a habit of which the risks are well known. Many people have given up smoking in recent years or at least tried to do so. Others who are not able or willing to quit are likely to experience high levels of dissonance which they seek to reduce with various strategies. Some of these strategies may involve illness behaviour. Our study has some implications for those who are involved in health promotion. The example of smoking suggests that a critical mass of awareness of the health risks is needed before behaviourial change takes place. When this critical mass is present, many people will change their habits, as the rapidly declining number of smokers illustrates. Large scale behavioral change will however, lead to more dissonance for those who are not willing to do so. Health promotion strategies should therefore be adapted to cope with these psychological reactions and put them to good use when possible. Recently, Aronson and his co-workers did that, by deliberately incurring dissonance as part of a health promotion campaign (Dickerson et al, 1992). They obtained promising results in terms of behaviourial change, which shows that dissonance and its reduction can also be used as forceful instruments in promoting health.

Notes

1. Those who use this argument may consider themselves to be in good company. Sigmund Freud, the inventor of 'defense mechanisms' used this argument when his friend Fliess urged him to give up smoking: I am not observing your ban on smoking, do you think it's such a glorious fate to live many long years in misery? '. (ref. Gay, 1989; p.77)

2.Epidemiologists have also observed that the risks of myocardial infarction in male cigarette smokers decreases within a few years of giving up smoking to a level which is similar to those who never smoked (Rosenberg et al., 1985).

3. The format of the health diary and the precoded questions were largely based on an earlier small scale study with a similar health diary (Lisdonk, 1985). The lay-out of our diary left some room for inadequate answers to the questions on illness action for the second complaint. For this reason, we discarded this material on the second complaint.

4. This limited operational definition of lifestyle was necessary because of the inclusion of two-way interactions in the analysis. Unhealthy habits were defined as follows: smoking, excessive drinking, no active sport, overweight (BMI $\geq$ 27 ;Seidell et al., 1986). The actual analysis was carried out with the square root of the number of complaints because of positive skewness of the untransformed variable.

5. The b coefficients can easily be transformed in odds-ratio's (OR = exp B) which is particulary helpful for assessing the effect of a dichotomous predictor on a dichotomous response variable and standard practice in epidemiology (Altman, 1991).

6. In order to save space, there are no tables presented for this analysis. These tables may be obtained from the author.

7. A temporal change of health habits (e.g. smoke less, consume less alcohol) is among the precoded responses on illness action. It is obvious than respondents who either smoke or drink tick that response more often than those who refrain from such behaviour. It was therefore assumed that no informative hypothesis could be derived for those particular answers.

8. These analyses were carried out with different transformations of the dependent variable. In this paper we show the results of the arcsine transformation.

9. There is a possible caveat in this analysis that is worth mentioning. Only on days with complaints could respondents indicate that they saw their GP. The likelihood of visiting a GP within the diary keeping period therefore increases with an increasing number of days with complaints, due to compounded probabilities. These increased chances of visiting a GP are independent of the personal assessments of the respondents, although it seems fair to assume that respondents are more likely to see a GP when their complaints last longer.

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Table 3. Illness action on days with health complaints of respondents with 1, 2-6, 7-21 days with complaints (age: 25-64 yrs)*

Illness action	1 day with complaints 16% of resp. (n=687)	2-6 days with complaints 47% of resp. (n=1982)		7-21 days with complaints 37% of resp. (n=1570)	
Nothing	29%	31%		27%	
Talking	13%	13%		15%	
Reading	1%	1%		1%	
Exercise/relaxation	6%	6%		12%	
Rest	39%	34%		31%	
Cut down activities	9%	8%		13%	
Stay in bed	3%	3%		4%	
Take care diet/smoke less	8%	9%		12%	
Reduce alcohol consumption	8%	10%		12%	
Home remedy	16%	16%		12%	
Medicine (prescribed)	5%	8%		25%	
Medicine (OTC/at home)	17%	16%		14%	
Help family/friends	2%	1%		3%	
Consult GP	3%	3%	(8%)**	3%	(30%)**

*) Illness action for the first complaint mentioned in the health diary. For respondents with one day with complaints the percentage with a certain assessment is mentioned (across cases). For respondents with more than one day with complaints, first the mean of the particular action is calculated over the number of days with complaints for each case, followed by a calculation of the mean of those means across all cases. The latter figure is entered in the table.

**) Percentage of respondents who saw their GP at least once on days with complaints within the diary period.

Table 4 Assessment of health complaints. Regression analyses (OLS) of the percentage of days with complaints that are assessed as 'self-limiting' and/or 'worrying'*) men & women separately; age 25-64 years.

	SELF LIMITING		WORRYING	
	♂	♀	♂	♀
Independent variables	(N=1744) Reg.coeff.** (t)	(N=2041) Reg. coeff. (t)	(N=1744) Reg. coeff. (t)	(N=2041) Reg. coeff. (t)
Age (25-64)	.0888 (1.772)	-.0575 (1.928)	-.1402 (2.834)	.0482 (1.632)
Education (1-7)	.0208 (0.862)	.0485 (2.075)	-.0157 (0.661)	-.0052 (0.227)
No exercise d	-.0119 (0.365)	.0413 (1.472)	-.0119 (0.478)	-.0211 (1.068)
Former smoker (>5 yrs) d	-.0871 (1.799)	.0516 (1.272)	.0182 (0.490)	.0157 (0.551)
Former smoker (≤5 yrs) d	-.1238 (2.227)	-.0510 (1.142)	.0642 (1.505)	.0898 (2.853)
Light smoker (≤10 c/d) d	-.0554 (1.054)	.0261 (0.614)	.0126 (0.313)	-.0466 (1.561)
Moderate smoker (11-20 c/d) d	.0227 (0.468)	-.0491 (1.191)	.0180 (0.483)	-.0014 (0.047)
Heavy smoker (>20 c/d) d	-.0752 (1.424)	.0135 (0.269)	.0001 (0.002)	.0201 (0.568)
Light/mod drinker d	-.0518 (0.979)	.0076 (0.237)	.0175 (0.430)	-.0318 (1.397)
Heavy drinker d	-.0728 (1.009)	-.0265 (0.317)	.0709 (1.281)	.0021 (0.035)
Underweight (BMI < 20.0) d	-.0153 (0.196)	-.0672 (1.688)	.0095 (0.158)	-.0312 (1.112)
Light overweight (BMI 25.0-29.9) d	.0097 (0.297)	-.0046 (0.137)	.0029 (0.115)	.0009 (0.039)
Mod/heavy overweight (BMI ≥ 30) d	-.0919 (1.291)	-.0620 (1.058)	.0536 (0.981)	.0277 (0.672)
Alone d	.0576 (0.272)	.0818 (0.543)	-.0553 (0.340)	-.0113 (0.106)
Alone * age	-.0233 (0.280)	.0068 (0.094)	-.0211 (0.256)	-.0323 (0.453)
Fixed role d	.6121 (3.460)	.1964 (1.836)	-.3198 (2.355)	.0810 (1.076)
Fixed role * age	-.3180 (3.430)	-.1478 (1.843)	.2339 (2.555)	-.0449 (0.567)
Number chronic conditions (0-25)	-.1331 (5.206)	-.0605 (2.587)	.1297 (5.137)	.0583 (2.525)
Neuroticism (GHQ)	-.0481 (2.126)	-.0282 (1.307)	.1888 (8.445)	.1718 (8.052)
Number days compl (1-21)	-.2976 (12.449)	-.3158 (14.164)	.3112 (13.189)	.3028 (13.743)
Constant	.8632 (4.817)	1.1024 (12.076)	.3305 (2.402)	-.0428 (0.666)
Total R^2	.18	.16	.21	.18

*) arcsine transformation of the percentage 'self-limiting' / 'worrying'

**) Regression coefficient:

1. dummy variables (indicated with d): 'b' reference categories: smoking: never smoked; drinking: abstainer; weight: normal (BMI 20.0-24.9)
2. numerical variables: standardized coefficients: Beta

t: $p < .05$ if $t > 1.96$; $p < .01$ if $t > 2.58$; $p < .001$ if $t > 3.29$ for two-sided tests

Table 5 **Illness action. (1) Regression analyses (OLS) of the percentage of days with complaints on which respondents talked with others about the complaint or read in a book/magazine about it. (2) Logistic regression of the probability of contacting a GP on one or more days with health complaints within the diary-keeping period. Men & women; age 25-64 years**

	TALK OR READ ABOUT COMPLAINT*)		VISIT A GP IN THE DIARY PERIOD	
	♂	♀	♂	♀
Independent variables	(N=1744) Reg. coeff.**) (t)	(N=2041) Reg. coeff. (t)	(N=1744) Reg. coeff.***) (Se)	(N=2041) Reg. coeff. (Se)
Age (25-64)	-.0031 (0.057)	.0674 (2.163)	0083 (0.0153)	-.0134 (0.0087)
Education (1-7)	-.0025 (0.098)	-.0066 (0.273)	-.0525 (0.0464)	.0094 (0.0468)
No exercise d	-.0038 (0.165)	-.0052 (0.285)	-.0120 (0.1660)	.0399 (0.1478)
Former smoker (>5 yrs) d	-.0196 (0.573)	-.0574 (2.192)	.2339 (0.2451)	-.1861 (0.2201)
Former smoker (≤5 yrs) d	.0096 (0.245)	.0187 (0.649)	.0970 (0.2826)	.3142 (0.2248)
Light smoker (≤10 c/d) d	-.0542 (1.457)	-.0156 (0.568)	.0044 (0.2701)	.1173 (0.2218)
Moderate smoker (11-20 c/d) d	-.0559 (1.631)	-.0649 (2.441)	-.1427 (0.2558)	-.1012 (0.2221)
Heavy smoker (>20 c/d) d	-.0763 (2.043)	-.0765 (2.365)	.0585 (0.2707)	.3862 (0.2447)
Light/mod. drinker d	-.0640 (1.711)	.0045 (0.213)	.2473 (0.2637)	-.0846 (0.1626)
Heavy drinker d	-.0824 (1.615)	.1958 (3.635)	.2401 (0.3579)	-.9695 (0.5725)
Underweight (BMI < 20.0) d	.0260 (0.471)	-.0122 (0.477)	.0268 (0.3809)	.1760 (0.2121)
Light overweight (BMI 25.0-29.9) d	.0219 (0.950)	.0223 (1.027)	.0933 (0.1638)	.3505 (0.1666)*
Mod/heavy overweight (BMI ≥ 30) d	-.0068 (0.136)	.0625 (1.653)	-.0526 (0.3472)	.2229 (0.2891)
Alone d	-.0508 (0.340)	.0966 (0.994)	1.4531 (1.1833)	-2.0251 (0.8418)*
Alone * age	.0437 (0.489)	-.0791 (1.055)	-.0539 (0.0308)	.0470 (0.0172)**
Fixed role d	-.0314 (0.249)	.0640 (0.927)	.8409 (0.8631)	.1352 (0.5539)
Fixed role * age	.0652 (0.652)	-.0858 (1.029)	-.0240 (0.0176)	-.0070 (0.0135)
Number chronic conditions (0-25)	.0324 (1.154)	-.0017 (0.070)	.0304 (0.0306)	.0628 (0.0282)*
Neuroticism (GHQ)	.0379 (1.528)	.0668 (2.924)	.0289 (0.0164)	.0092 (0.0145)
Compl. new/unknown (% days)	.0629 (2.623)	.1417 (6.449)	.7971 (0.2797)**	1.3763 (0.2808)***
Compl. known (% days)	.0291 (1.224)	.0671 (3.072)	-.0944 (0.1733)	-.5638 (0.1681)***
Compl. existing >1 yr (% days)	-.0719 (2.499)	-.0683 (2.769)	-1.8305 (0.2348)***	-1.7841 (0.2228)***
Compl. bothering (% days)	.1429 (5.713)	.0845 (3.603)	.4933 (0.2319)*	.6702 (0.2004)***
Compl. worrying (% days)	.1374 (4.949)	.1287 (5.263)	.3667 (0.2260)	.4179 (0.2267)
Compl. self limiting (% days)	.0028 (0.102)	.0306 (1.270)	-1.6170 (0.2104)***	-1.6916 (0.2012)***
Number days compl. (1-21)	-.0239 (0.860)	.0632 (2.489)	.1116 (0.0126)***	.1101 (0.0124)***
Constant	.1564 (1.188)	-.0074 (0.117)	-2.3638 (0.9035)**	-1.4759 (0.4876)**
Total R^2	.07	.10		

(table 5 continued)

*) arcsine transformation of the percentage of days 'talk or need about complaint'

**) Regression coefficient:
1. dummy variables (indicated with d): 'b' reference categories: smoking: never smoked; drinking: abstainer; weight: normal (BMI 20.0-24.9)
2. numerical variables: standardized coefficients: Beta
t: $p < .05$ if $t > 1.96$; $p < .01$ if $t > 2.58$; $p < .001$ if $t > 3.29$ for two-sided tests

***) Logistic regression with indicator coding. Standard errors in parenthesis
* $p < .05$ ** $p < .01$ *** $p < .001$ (Wald Statistic)
For reasons of legibility are assessments not coded as percentages but as proportions in the actual regressions.

Fig.1. Number of days with complaints
in a period of three weeks
(age 25-64 yrs)

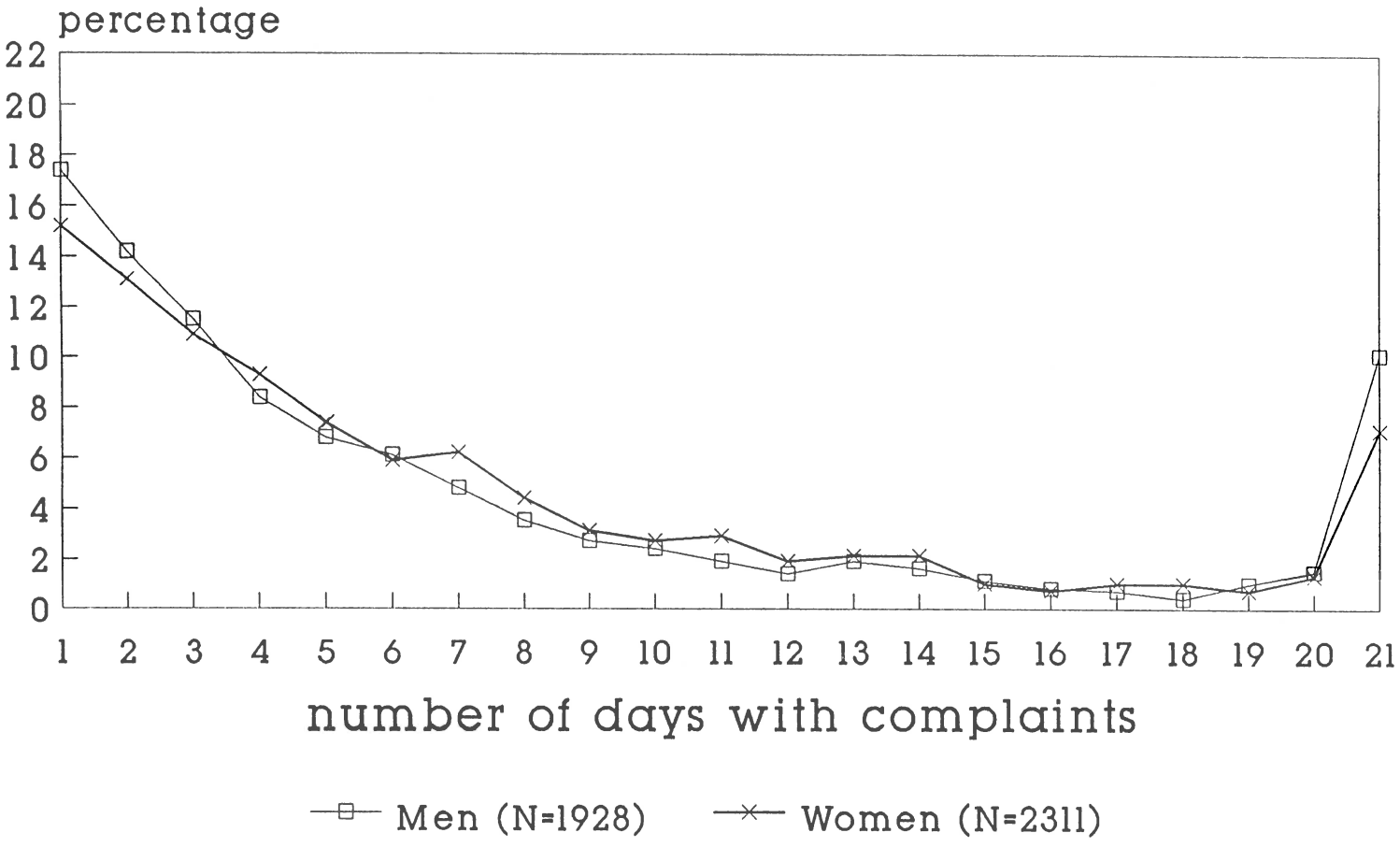

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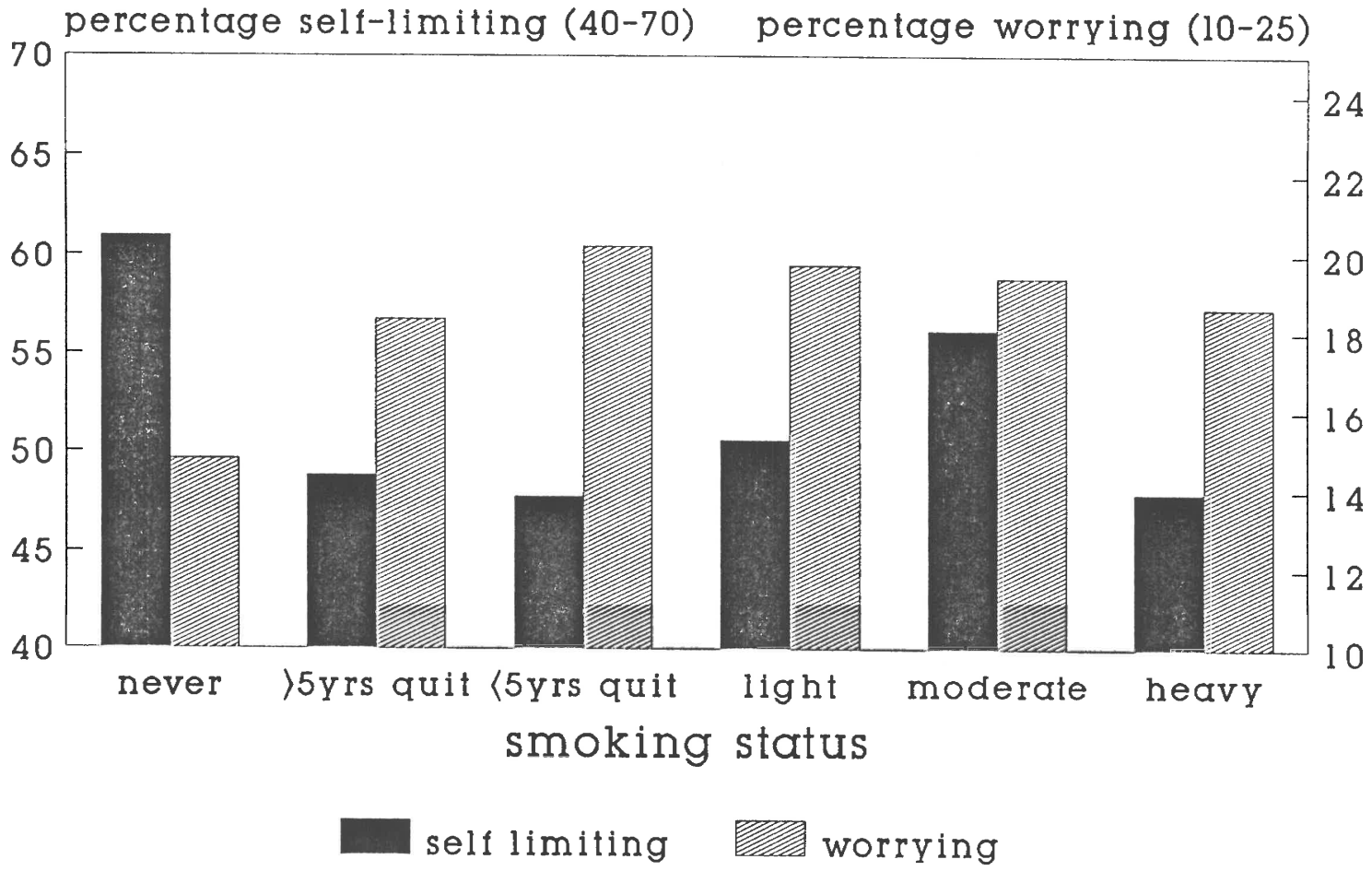
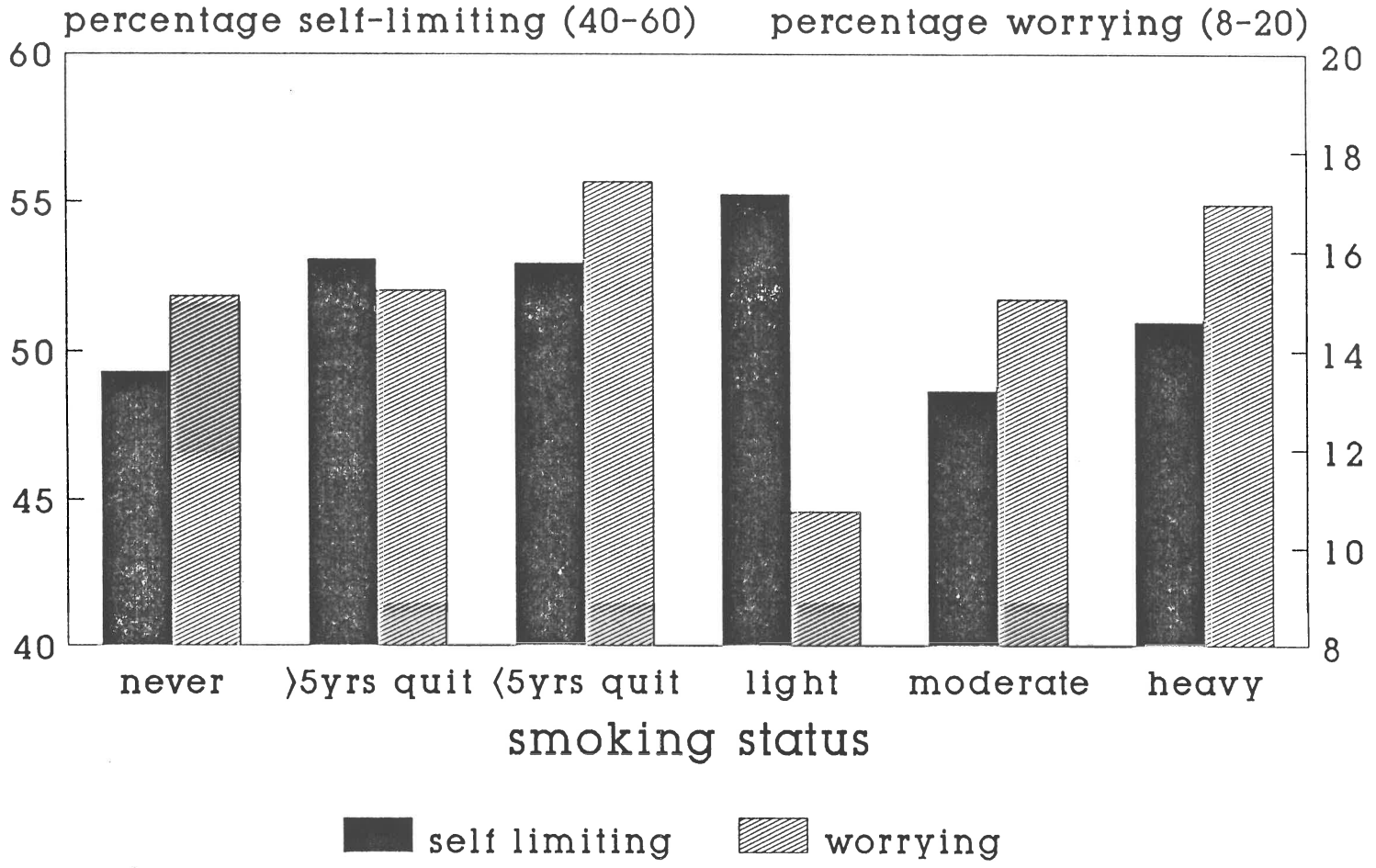
Fig 2a.Assessment of symptoms
as self-limiting or worrying
(Men:25-64 yrs;n=1888)



Dutch Survey of General Practice

Fig 2b. Assessment of symptoms
as self-limiting or worrying
(Women:25-64 yrs;n=2266)



Dutch Survey of General Practice

Artikel 5.

The role of lay advice and the expectations of medical care in the process of decision making to consult a GP during new episodes of illness.

Auteur:

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(concept-artikel bestemd voor Journal of Health and Social Behavior)

Title: The role of lay advice and the expectations of medical care in the process of decision making to consult a GP during new episodes of illness.

1. Introduction

Over the past decades our knowledge of help seeking behaviour has substantially increased. Studies in general practice and community settings have revealed that, contrary to conventional wisdom, "being in good health" does not necessarily mean being free of symptoms (Blaxter, 1990, Huygen, Van den Hoogen and Neefs, 1983). Most symptoms are treated with self care and rarely is attendance by a professional considered necessary (Wadsworth, Butterfied and Blaney, 1971; Demers et al. 1980; Verbrugge and Ascione, 1987; Stoller, Forster and Portugal, 1993). Self care encompasses a wide range of activities, like applying home remedies or OTC medicine, seeking advice from others and changes in one's daily routine to accommodate the illness (Dean, 1986). Despite the high level of self care for common symptoms, physicians often complain that patients visit the surgery unnecessary, which is of course more likely for minor symptoms than for serious illness (Cartwright, 1967). Lay people generally have higher expectations of the possibilities of treatment of common symptoms than general practitioners have (Van de Lisdonk, 1985a). These expectations are of significant influence in the decision to consult a GP (Van de Lisdonk, 1985b; Dean, 1986; Van de Kar, 1992; Fylkesnes, 1993).

The decision to treat a symptom with self care or to consult professional help is rarely made by the individual alone. Other people in one's immediate social environment are frequently approached for advice (Suchman, 1972; Sanders, 1982; Foets, 1985). Research findings suggest that the most common advice is not to rely on self care, but to seek professional help (Twaddle, 1969; Elliot-Bins, 1973). A recent Dutch study in 8 general practices has shown that the advice of others contributes significantly to the decision to consult a GP (Van de Kar, 1992). Obtaining advice from others in one's social environment, or 'lay referral' as it is often called, is however not always associated with an increased probability to seek professional care. In an older study from the Netherlands, Cassee has found that lay advice was often mentioned as a reason for delaying a consultation (Cassee,

1973). We may conclude that lay advice may both encourage or discourage people to seek care. In a review article Gottlieb stated that "Results of research on the lay referral system point unambiguously to one fact: that family members, friends and acquaintances in the immediate social environment of the help seeker can either expedite or delay utilization of both remedial and preventive health care" (Gottlieb, 1976).

2. The aim of this paper

The aim of this paper is to show how both the expectations of medical treatment for minor illness and lay advice are related to the decision to seek professional help for common health problems.

In a study on lay referral, it is important to consider how lay advisers are likely to react to someone who discusses his or her health problems. In a study from the Netherlands among chronic patients and the people that constitute the patient's social network, it was found that network members generally share similar attitudes towards care seeking (Mootz, 1990). Sharing similar attitudes had an effect on the amount of treatment that was sought. The highest number of contacts with physicians occurred among patients with network members that share the same positive attitude towards medical consumption. The lowest number of contacts with physicians was found among patients who share a negative attitude towards medical consumption with the members of their social network. In social networks where opinions differed, the patients had an intermediate level of medical consumption. Consequently, since most potential lay advisers share similar attitudes towards care seeking with the person who suffers from a health problem, lay advice is expected to reinforce already existing attitudes. In addition, we expect that lay advice is often sought to reassure the individual in a decision that he or she has probably already made. These considerations led to the following hypothesis.

Hypothesis: *Lay advice on common health problems reinforces existing attitudes towards obtaining treatment for these problems and will either increase or decrease the probability of obtaining professional help, depending on the patient's own pre-existing attitude.*

Stated in research terminology, this assumption means that we expect an interaction between an individual's expectations of medical care and the outcome of lay advice in terms of the probability of seeking professional help for a certain health problem. The following tables illustrates this assumption.

Table 1. The combined effect of the attitude towards medical care and the advice of lay others on the probability to seek professional care.

		expectation of medical care	
		low	high
lay advice	no	-	+
	yes	- -	+ +

key: + + highest probability to seek prof. care
+ above average probability to seek prof. care
- below average probability to seek prof. care
- - lowest probability to seek prof. care

3. Studies on the effect of attitudes and lay advice.

Previous research on illness behaviour and care seeking has often led to conflicting results on the effect of attitudinal variables or lay referral. These differences are often attributed to differences in the research design, with which these results were obtained (Mechanic, 1979).

Studies that are carried out in the tradition of the large sample survey showed that the expressed 'need' or reported health status is the single most decisive factor in the explanation of health care usage (Andersen and Newman, 1973; Wolinsky, 1978; Van der Zee, 1982; Fylkesnes, 1993). Socio-economic status, income,

attitudes towards medical care and lay advice seem of relatively minor importance.

Other, and usually smaller studies, show that a whole range of personal, situational and cultural characteristics influence the decision to seek professional help (Pescosolido, 1992). In the early 1970s Zola wrote an influential paper based on interviews with outclinic patients, most of whom had experienced symptoms for a long time without seeking treatment (Zola, 1973). Certain conditions or 'triggers', like: an interpersonal crisis, pressure from others or unexpected long duration of symptoms, needed to be present before these patients consulted a physician. Studies in the anthropological tradition emphasized the culture of particular socio-economic or ethnic groups and its (dis)similarity to the culture of professionals in health care as a important variable in explaining the effect of lay advice on health care utilisation (Freidson, 1975; Chrisman an Kleinman, 1983). Mechanic was the first to observe that these qualitative studies led to results that are in sharp contrast with the previously mentioned survey research. These survey's, retrospectively query people about their medical consumption and this information is then statistically related to the reported health status and other characteristics of the individual respondent (i.e. education, household income, attitudes towards medicine) or the health care system. A weakness of these cross-sectional studies is, that they fail to capture the dynamics of symptom appraisal and the decision making aimed at alleviating these symptoms.

Theoretical contributions unanimously maintain that care seeking progresses through several stages, starting with the labelling of symptoms and followed by an elaborate process of decision making on the course of treatment (Fabrega, 1973; Dingwall, 1976; McKinlay, 1981). Individuals with symptoms monitor the success or failure of their actions and decide accordingly on continuing or changing their treatment strategy (Cameron, Leventhal, and Leventhal, 1993). Qualitative studies that are based on participant observation or small surveys with extended interviews are usually more in agreement with these theoretical descriptions of care seeking. Consequently, these small studies show larger effects from attitudes and lay referral than the large retrospective surveys. It could however be argued that the small qualitative studies are hard to generalize mainly because they are conducted among special groups within society (see for example: McKinlay, 1972).

4. Monitoring help seeking behaviour with health diaries

In a more recent paper Mechanic argues that "methods of inquiry (..) must capture the dynamic nature of these meaning systems and how they are influenced by socio-cultural factors and situational contexts " (Mechanic, 1989). He proposes to combine the advantages of quantitative and qualitative studies and suggest to study illness behaviour (like care seeking) with health diaries.

Health diaries have been used on several occasions to study the occurrence of symptoms and illness behaviour (Eliot-Bins, 1973; Freer, 1980; Verbrugge and Ascione, 1987; Bentzen, Christiansen, Pedersen, 1988). They are particularly well suited to obtain information on common symptoms of minor illness for which no professional help is sought (Verbrugge, 1980). Due to statistical and practical difficulties however, the existing health diary studies have only rarely exploited the potential of a dynamic analysis that this type of data offer.

In this paper we use health diary data to study our hypothesis on help seeking behaviour in a prospective manner. From the foregoing we may conclude that this data are more appropriate to test our hypothesis than either survey data or a small scale qualitative study.

The health diary study is part of a larger survey on the position and functioning of General Practice in the Netherlands (Foets, Van der Velden, De Bakker, 1992) In the health diary study more than 10.000 respondents managed to keep a health diary for a period of three weeks with daily entries about their health status, the nature and appraisal of symptoms and the illness action on symptomatic days. The health diaries were preceded by a health interview during which the attitude towards care seeking for common symptoms was assessed. The entries in the diary can be used to construct episodes of illness, defined as successive symptomatic days (see below). As will be shown later, most of these episodes are of short duration, considered self limiting and do not lead to much restriction of daily activities. Professional care is only rarely sought and when a consultation takes place it is usually with a General Practitioner. In the Netherlands, almost the entire population is listed with a GP and most of the health problems that patients express during a consultation are dealt with by the GP only. The entries in the diary on whether or not lay advice is obtained and if a GP is consulted on later day in the episode, provide the information with which the previously mentioned

hypothesis can be tested. The probability of consulting a GP serves as a response variable.

5. Putting the effect of lay advice and attitudes in perspective.

As much as both the attitude towards obtaining medical care for common health problems and lay advice may increase or decrease the probability of consulting a GP, these variables will almost certainly not be the most decisive factors in the decision to do so. Previous studies have repeatedly shown that the nature of the symptoms that are experienced, the assessment of the symptoms as for instance threatening or worrying and the interference of symptoms with daily life, all are very important factors that spur the individual to seek professional help (Mechanic, 1978). We like to include these as variables in our analysis. Firstly, because we would like to establish how these factors compare with the effect of the combination of attitude and lay advice and secondly because we would like to see the 'net' effect of the variables related to our hypothesis, controlling for other factors. These determinants of care seeking behaviour may be grouped with the well known framework of predisposing, enabling and need variables. Although this framework has been heavily criticised for its lack of theoretical underpinning, it provides a simple, appealing ordering and allows us to compare our results with other studies. The need to obtain professional care can be measured with the general health status of the individual and the nature of symptoms, their assessment and duration. There are some predisposing and enabling variables that deserve special attention. First of all, we like to know if lay advice works out differently for men and women and we will therefore include the sex of the respondent and the possible interaction with lay advice in the analysis. Secondly, there may be differences in the effect of lay advice for those who either have or do not have acquintences who are working in a certain area of health care.

There are several other variables that may encourage or discourage someone to seek professional care and they should be included in the analysis as well. People that have not seen their GP for a long time may feel inhibited to consult him or her with their current symptom. Individuals with full time jobs (which in the Netherlands are more likely to be men than women) may not find time to see a GP on short notice. Their 'time price' for health care usage is higher (Janssen, 1989).

In the Netherlands, privately insured patients are free to determine if they want (full) coverage for the costs of GP care or not. Coverage may exert an effect on the probability of seeing a GP for the symptoms present during the period that the diary was kept. Finally, psychological distress is a well known factor in care seeking behaviour that should be included. All of these additional variables are included in the analysis in a explorative stepwise manner. Modelling starts with the entire set of variables, eliminating non-significant variables one by one until the smallest set of variables remains.

6. Material and methods

The data that are used in this study are gathered within the framework of the Dutch National Survey of General Practice; a nationwide study conducted in 1987/1988 among 161 General Practitioners in 103 practices using a non proportional stratified sampling scheme with urbanization, region and distance to the hospital as stratifying variables. A random sample of 100 patients of each General Practitioner was approached for a health interview and asked to keep a structured health diary about the daily occurrence of health complaints and illness behaviour for the following three weeks. The patients were approached with a letter from the GP at their home address. The response rate is 77 percent for the questionnaire and of those respondents 85% completed the health diary for the entire 3 weeks (see table 1 and Foets, Van der Velden, Bakker, 1992). The following paragraphs describe the variables that are used. The data from the health interview survey, which preceded the diary study, provides the information on the general health status and other background characteristics of the respondent.

The attitude towards seeking medical treatment for common illness is measured with an attitude scale, which was adopted from an earlier health diary study that was also carried out in a General Practice setting. (Van de Lisdonk, 1985). The respondent is asked whether or not he or she agrees with statements like: "diarrhoea will disappear quicker with a prescription from your GP" or "in order not to miss a serious condition it is always best to show a soar throat to your doctor" The earlier study used a 23 item likert-scale that discriminated very well between users and non-users of GP care for common minor problems. A twelve item version of this list was adapted for our health interview. Previous experiences with the 12 item version showed good scaling properties (Cronbach's α: 0.91).

Two indices of general health status are obtained from the survey data : (1) an index of the number of chronic conditions (weighted by severity) based on a checklist with 25 chronic conditions and (2) subjective health or the respondent's personal assessment of his or her own health (excellent, good, fair, poor, very poor).

During the interview the respondents were asked about their health care insurance (private or compulsory) and the privately insured were asked if the costs of GP care are completely covered. The variable 'insurance coverage' has three values: insurance through a sick fund, private insurance with complete GP coverage and private insurance without complete GP coverage. The respondents were also asked if they have acquaintances who work in health care. In this analysis we use this variable as a dichotomie and do not distinguish the profession of these acquaintances and the field they are working in.

Another facilitating or enabling variable is the employment status of the respondent. It is expected that people in paid employment in particular men, have less time to spare to consult a GP. In the analyses for this paper we distinguish between respondents with a paid job and a grouping of all other categories, with an interaction term allowing for gender differences. Sex and age were also included in the analyses as main effects. The time interval since the last consultation of a GP took place is measured in months. Finally, our analyses will use the score on Goldberg's Health Questionnaire as an indicator of psychological distress or neuroticism. Previous research has shown that neuroticism is an important determinant of illness behaviour and care seeking (Westhead, 1985; Furer & Persoon, 1989).

The health diaries consist of a 21 paged booklet with a simple one-page questionnaire to be completed each day. Respondents of age 15 years were asked to fill in the diaries themselves, while the diaries of younger children were kept by their parents or guardians. The diaries of these children, or any other data obtained with proxy interviews, are not used in the present analyses. The respondents were asked to provide a daily rating of their health, mood and activities and whether or not any health complaints occurred that day. Those who had complaints were asked to describe the nature of their complaints (with a maximum of two) in their own words. Then a series of precoded questions followed on the assessment of these complaints as: new/unknown, self limiting, worrying, already lasting over 1

year, bothering, its cause known (based on Jones et al., 1981) and the illness action prompted by the complaint on that day. For both complaints 16 different actions could be listed, ranging from doing nothing, talking to others about the symptoms, which is considered to be obtaining lay advice for the present analysis, applying home remedies or prescribed medicine to consulting a GP, another health care professional, or receiving help from family, neighbours and friends[1]. All questions on assessments and illness behaviour are simple 'yes or no' questions. The lay-out of the diary and the questions that were used have been adapted from the same health diary study that was mentioned earlier (Van de Lisdonk, 1985). This lay-out implies that information on symptom assessment and illness action is only available on symptomatic days. The wide variety of actions that the respondent could tick in the structured diary also implies that the information on each separate activity is not very detailed. With regard to lay advice, we do for instance not know if one or several people were contacted and how they are related to the respondent, nor do we know the content of the actual advice.

Our interest in the development through time of both assessment and illness action necessitated the definition of episodes or spells of illness. In our study, illness episodes are delineated by one day of being 'free of symptoms' which is similar to other health diary studies (Roghmann and Hagherty, 1972; Banks et al. 1975; Bentzen, Christiansen and Petersen, 1988) An episode consists of a period of un-interrupted days with health complaints, delineated by a day without symptoms at both beginning and end. This definition causes some problems on the first and the last day of the diary keeping period. It was decided to keep track of the occurrence of symptoms from the second day onwards, in order to ensure that a day without symptoms can precede a new episode. This procedure excluded respondents that reported symptoms on every day in the diary keeping period. They are treated separately. Episodes that continue on the last day (day 21) may be unfinished and we do not know if a consultation took place during that episode after completion of the diaries. These episodes constitute only 10% of the total number. Another problem with the current definition is that it does not take changes in the nature of the health problem into account. Attaching labels to episodes however is fraught with difficulties: are respondents who describe their complaints sequentially as coughing, runny nose, fever, and flu having a different illness each day? Obviously not, but many cases may not be a self evident. The health complaints of the diary were coded in 97 categories along the lines of the ICPC chapters (Lamberts & Woods, 1987).These two digit system still contained

too many categories that were reported by only very few respondents. The larger categories were grouped in 6 large categories: (1) respiratory symptoms, (2) headache, migraine etc, (3) musculoskeletal,(4) stomach/bowel, (5) fatigue/psychological and a sixth category with all remaining symptoms.

The data from the diary were combined with the interview data and aggregated, which turned the episode into the unit of observation. The selection of cases, from the initial questionnaire data to the file of episodes, is summarized with the following table.

Table 2.

7. Statistical Analysis

The multivariate analysis of help seeking during illness episodes was carried out with logistic regression, using SPSSX. Having either none or one or more contacts with a GP during the episode is the dichotomous dependent variable in this analysis. The hypothesis stated that those who have a lenient attitude towards visiting a GP for common health problems are particularly likely to consult a GP after obtaining lay advice, while those who have an attitude, characterised by not seeking help easily, are all the more likely not to consult a GP after talking to others about their symptoms.

In order to answer this question with our data, a selection among the episodes needed to be made. First of all, episodes that lasted only one day were discarded. Also episodes during which a consultation of the GP preceded (the possibility of) lay advice could not be used. For the analysis of illness behaviour on the first day, it meant that episodes with a GP consultation on that should be excluded. For the analysis of illness action on day 2, it meant that episodes with consultations on either day 1 or day 2 needed to be excluded and so on. The remaining episodes were analyzed separately for each of the successive days in the episode in the following manner (this procedure was carried out for day 1 to 4 only, due to the small number of episodes of longer duration) :

1. the nature of the symptom on that day, its assessment and whether or not lay advice took place on that day were inserted as predictors along with the time

invariant variables.

2. The stepwise regression procedure retained the smallest set of statistical significant variables (exclusion criterium p >.10) in the equation which describes the likelihood of consulting a GP at least once on a later day of the episode.

The previous table has shown that respondents have on average more than one episode in a period of three weeks, which implies that episodes are not independent statistically. This problem cannot be accommodated in the descriptive tables (unless we decide that each individual contributes only one episode). In multivariate analysis however, conditional independence can be achieved when that the model is correctly specified (Yamaguchi, 1991).

8. Findings

The presentation of the results of our study starts with some descriptive material that provide a general overview on both the occurrence of common illness among adults of 15 years and over and on the actions that were taken to alleviate symptoms. In this description we distinguish the occurrence of new episodes, with a duration between 1 an 20 days, from episodes that last the entire diary keeping period of 21 days.

A striking feature of this, and in fact any other diary study, is that more than half of our respondents have experienced new episodes of illness during the diary keeping period. These new episodes are mostly of short duration which is shown in the following graph.

Figure 1. Duration of new episodes

Around 60 percent of the episodes last a single day and 47 percent of the respondents experience only one new episode in three weeks. On average, every respondent has 2.1 new episodes of illness in three weeks. The majority of the new episodes (60%) are experienced by women.

The following table shows that the experience of one or more days of illness is compatible with considering oneself to be a in good health. The checklist on chronic conditions in our survey consisted of conditions with varying levels of severity, including relatively mild ones. It therefore does not come as a surprise that even about half of the respondents without new episodes suffers from one or more of those conditions. The table also shows that there is a sharp distinction between respondents who have short episodes of illness and those who experience health complaints continuously. The latter group is in much poorer health, while only a small minority does not suffer from a chronic condition.

Table 3.

The distinction between these chronically ill and those that only suffer from one or more acute symptoms becomes even more apparent when we examine the following table that shows the nature of the symptoms along with the assessments and illness actions.

Table 4.

Respondents with short episodes typically suffer from a headache for one or two days or from a cold or flu when their symptoms last up to a week. These short spells of illness are usually considered self-limiting and no reason for worry. In most cases self help with home remedies or otc medicine seems sufficient, only rarely are professionals consulted or is prescribed medicine used. An entirely different picture emerges for those who suffer episodes of longer duration. Their conditions have in many cases already lasted for over a year, and on most of the

symptomatic days they suffer from musculoskeletal problems. Prescribed medicines are regularly used, and consultations of a GP or other professionals are not unusual on one or more days of the diary keeping period.

We may conclude from these tables, that symptoms of illness are indeed very common, but at the same do not interfere much with people's daily routines. Most symptoms may well be regarded as minor illness in the subsequent statistical analysis. A small proportion of the population suffers from symptoms on a daily basis. These symptoms are often the reflection of the presence of chronic conditions. The episodes of these respondents are not used in our analysis of help seeking behaviour for common illness.

The remainder of this section is dedicated to the interrelationship between lay advice and professional help. Lay advice often accompanies obtaining professional care. In 44 % of the episodes with a GP consultation, also lay advice occurred. Episodes that did not end in the consultation of a GP, saw a much lower figure: lay advice occurred in only 18% of these episodes[2]. In our data, obtaining lay advice was not statistically related to the respondent's attitude towards care seeking. This is not the case when it comes to professional help. The episodes during which a GP consultation took place, were generated by respondents with significantly higher expectations of medical care for common symptoms ($F = 11.18$; $df = 1$; $p < .001$)[3].

We are in particular interested in knowing how seeking lay advice at the beginning of a period of illness is related to consulting professional help in a later stage of the episode.

The statistical analysis started with the 'effect' of lay advice on the first day. For episodes with lay advice on that day the changes were about twice as high that a GP consultation took place on a later day than for episodes without such an advice. A stepwise logistic regression was carried out in order to obtain the most decisive factors. The results of this analysis are presented in the following table.

Table 5.

It show that the duration of the episode, its nature and assessment on that first day on which the lay consultation took place are the most important variables. There is also a significant main effect of lay consultation in the expected direction. The attitude towards seeking professional help for minor health problems has no significant main effect in this equation, but together with the lay consultation there is a significant interaction effect: those who are inclined to seek professional help for minor problems and also obtained lay advice are more likely to consult the GP than those who did not seek help from lay people in their immediate environment. The following graph shows this effect more clearly.

Figure 2.

The attitude towards care seeking does only increase the likelihood of contacting a GP for those who obtained lay advice prior to a consultation. The stepwise regression excluded a number of variables that were not significant. Among those are sex and age, the availability of acquaintances who work in health care, employment status and health care insurance and variables that measure health status: subjective health and the number of chronic conditions.

This analysis was repeated for successive days of the illness episode. The effect of lay consultations of day 2 to 4 (with no preceding consultation of a GP) was assessed with the same variables in the same stepwise manner. Lay consultations on the second day showed a similar pattern with the same interaction effect. The regression for day 3 and 4 on the other hand were markedly different. There was no significant main effect of lay consultation or the nature of the symptom on either day 3 or day 4. There was a significant interaction of lay consultation and sex however, with men more likely to consult a GP after talking to others than women. Also the presence of chronic conditions significantly increased the likelihood of consulting a GP on later days in the episode.

9. Discussion

This study on help seeking behaviour has shown that the decision to consult a GP is primarily determined by the assessments that people make of their symptoms of ill health. When symptoms are interpreted as new and unknown and worrying and bothering and not disappearing by themselves, help is much more often sought than when symptoms are assessed in opposite terms[4]. Each of the six assessments that the structured diary contained, contributed significantly to the probability of seeing a GP on a later day of the illness episode. Apart from the assessments their is little additional effect of the nature of the symptom (at least not in the broad categories that we employ) although the experience of psychological symptoms, which in our data range from fatigue to depression, significantly increases the likelihood of seeking professional help. The general health status of the individual did not contribute much to the decision to seek care for the present symptoms. Only for episodes of longer duration did the presence of chronic conditions matter. This finding is an interesting contrast to the results of the large survey studies, that were mentioned earlier. These studies reported that it is the health status of the individual that determines care seeking. Our analysis shows that it is in fact the assessment of symptoms which does so. It is of course true that individuals who are in poorer health are more likely to experience symptoms that are considered serious, which then propel people to seek help, but health status by itself and as an abstract category is not what governs decision making in help seeking behaviour.

Lay advice is the central topic of our paper. How do the results compare to others? Other studies on help seeking showed much higher levels of lay consultation than we found (as reported in table 4). In Suchman's study 74% of the respondents discussed their problems with others before seeing a physician, while in the Primary Health Care Project in Belgium, lay advice was sought for 58 % of the complaints (Suchman, 1972; Foets, 1985). Similar figures are found in other studies (Sanders, 1982; Verbrugge & Ascione, 1987). There are two explanations for the comparatively low percentage in our study. Firstly, the lay-out of the diary provided the respondent with the possibility to tick one or more illness actions on a list with 16 different behaviours. It is understandable that 'talking about my symptoms with others' is only affirmed by those who explicitly and consciously did so. Another explanation is, that Suchman's and some other studies on help seeking behaviour are limited to patients with serious conditions, for which the occurrence of lay

advice is much more likely.

People who talk to others about their illness on one of the first days of an illness episode are more likely to consult a GP later on, than those who keep their health problem to themselves. This finding does not necessarily establish a chain of causality between lay advice and seeking professional help. Other factors, like the assessments, that play such a crucial role in care seeking, may in fact be responsible. When symptoms are very disrupting for instance, they may be a subject for a conversation with almost everybody! With respect to our hypothesis it was interesting to find that lay advice does indeed increase the likelihood of seeing a GP among people who are already inclined to seek care for minor problems. People who are in general less likely to do so, where on the other hand not reinforced in these intentions. The probability that they would see a GP seemed not to have decreased much after talking about their symptoms [5]. Our results support previous findings that showed that lay advice is primarily associated with more rather than less professional care and by no means a substitute for professional care when the general practitioner is concerned.

Notes

1. The questionnaire format of the diary was not clearly understood by all respondents. The assessments were precoded as 'yes or no' items, whereas the illness actions were coded with one single box that needed to be ticked if that particular action was carried out. Since the questions for the first and second symptom were placed side by side, some respondents got confused. The answers to the assessments were often missing (15 %) and sometimes the illness actions for the second symptom only made sense when they were considered as 'no' rather than 'yes'. In order to obtain answers that are as consistent as possible, the following was decided: only assessments and actions for the first symptom are used and the missing values for the assessment are recoded as 'no' expect for those cases that contained only missing values on the 6 assessment questions; for those cases the assessments were coded as missing.

2. These figures should interpreted with care. The consultation of a GP usually took place during episodes of longer duration. Longer duration by definition increases the probability of seeing any sort of action occur at least one, which in this case is lay advice.

3. The unit of analysis is the episode, whereas the attitude towards care seeking is a characteristic of the respondent. Respondents may have more than one episode, which means that statistical associations are slightly less strong than they appear.

4. The sum of the odds-ratios of each of these assessments is 12.44, which means that professional care from a GP is about 12 times more likely to occur during episodes where all of these assessments are made on the first day when compared to episodes where none of these assessments is made.

5. The outlier in figure 2 at point 2 on the horizontal axis, makes it difficult to interpret this graph unequivocally. In the case of reinforcement however, we expect the trend lines to cross in the middle.

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Table 2. Selection of cases and episodes

No.	Selection	Number of cases	Percentage
1.	Sample of respondents	17047	
2.	Respondents who completed the questionnaire	13014	77 % of 1.
3.	Respondents who also completed the diary 21 days	11038	85 % of 2.
4.	Respondents of age 15 years and over[1]	9035	82 % of 3.
5.	Respondents of age 15 years and over with one or more symptomatic days.	5982	66 % of 4.
6.	Respondents of age 15 years and over with new episodes of illness	5184	87 % of 5.
7.	Respondents of age 15 years and over with symptoms on each day (21 days)	484	5 % of 5.
8.	Number of new episodes of respondents of age 15 years and over	10947	

[1]. Without proxy interviews.

Table 3. Health indicators of respondents with or without new episodes of illness.

Duration of new episode	percentage in good health	percentage without any chronic condition
No new episode	85 %	50 %
1-2 days	83 %	39 %
3-7 days	78 %	34 %
8-20 days	72 %	30 %
21 days	37 %	12 %

Note: unit of observation = respondents when no new episodes are present or when episodes last 21 days, otherwise unit of observation = episode.

Table 4. Characteristics of episodes of illness that are either new episodes (1-20 days) or lasting the entire diary keeping period (21 days). Figures are percentages of days.

	Duration (days)							
	1-2		3-7		8-20		21	
symptom								
- respiratory	11		27		31		10	
- headache/migraine	29		14		8		7	
- muskuloskeletal	20		24		34		53	
- bowel/stomach	11		9		5		6	
- fatigue/psychological	13		14		13		11	
rest.	18		12		8		13	
assessment								
- longstanding (>1 year)	31		29		38		72	
- worry	14		19		26		48	
- self-limiting	57		52		35		10	
illness action								
- cut down activities	7		11		13		14	
- remain in bed	2	(3)	5	(11)	6	(21)	3	(14)
- home remedy	12		15		13		9	
- otc medicine	14		15		14		12	
- prescr. medicine	10		16		33		43	
care seeking								
- lay advice	14	(15)	15	(29)	17	(45)	16	(53)
- General Practitioner	2	(3)	4	(13)	5	(38)	3	(35)
- other	1	(1)	2	(5)	3	(14)	5	(30)
N of cases (episodes)	8543		1966		438		484	

Source: Health diary study from the Dutch National Survey of General Practice.

Note: The number in parenthesis is the percentage of episodes during which a certain action (e.i. lay advice) occured at least once.

Table 5. **Logistic regression of the probability of consulting a GP during episodes of illness, with or without previous lay advice on the first day of the episode (N of episodes=3624)**

Effect	B	SE	Sig
lay advice on day 1	.377	.1602	.0186
expectation of GP (Z score)	-.0201	.0768	.7934
interaction lay advice with expectation of GP	.3287	.1566	.0358
new symptom day 1	.3405	.1792	.0574
longstanding symp. day 1	-1.4061	.1860	.0000
bothering symp. day 1	.3990	.1623	.0139
worry symp. day 1	.7218	.1648	.0000
self-limiting symp. d1	-.6821	.1471	.0000
cause known symp. d1	-.3565	.1368	.0092
respiratory symp. d1	.0541	.2559	.8326
headache etc. d1	.0066	.2702	.9804
musculoskeletal symp. d1	.0170	.2481	.9454
stomach/bowel symp. d1	.0160	.3053	.9583
fatigue/psych. symp d1	.5673	.2529	.0249
duration episode (days)	.2326	.0154	.0000
psych. distress (GHQ-30)	-.0268	.0159	.0927
last consultat. GP (months)	-.0163	.0073	.0256
constant	-3.1864	.2691	.0000

reference categories for categorical variables: no lay advice, no new symptom, no longstanding symptom, no worry about symptom, no self-limiting symptom, cause symptom unknown, nature of symptom = rest.

not significant variables in stepwise regression ($p > .10$) : main effects: sex, age, subjective health, number of chronic conditions, health insurance, employment status, having acquaintances who work in health care.; interaction effects: employment status with sex, lay advice with having acquaintances who work in health care, lay advice with sex.

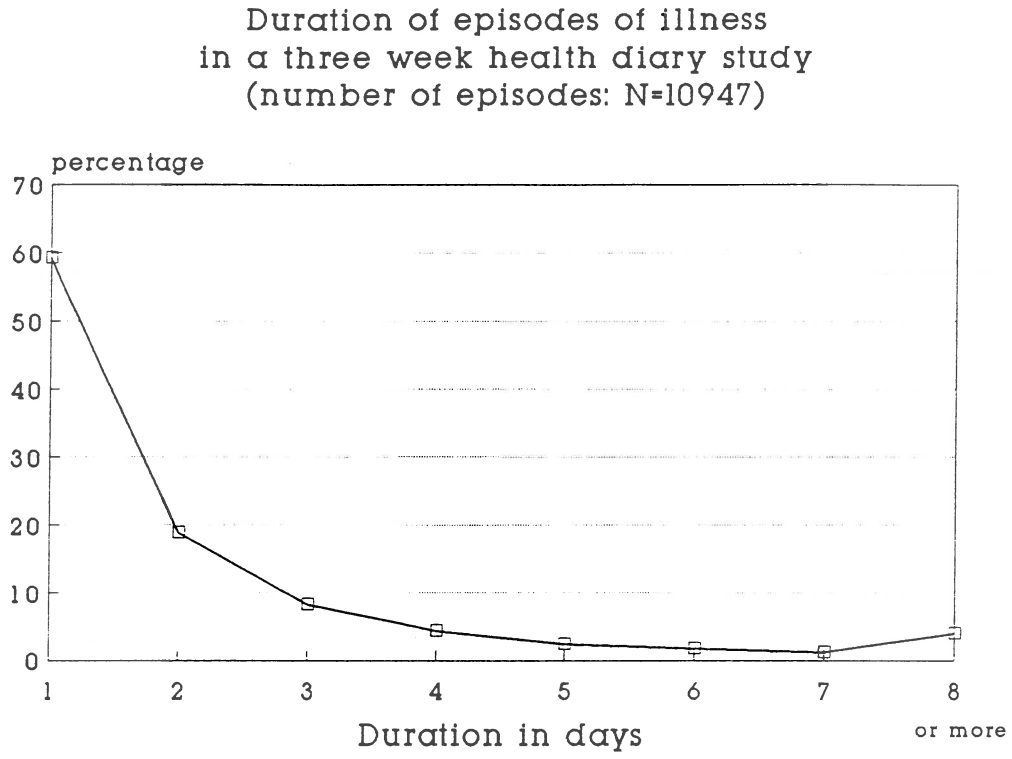

figure 1.

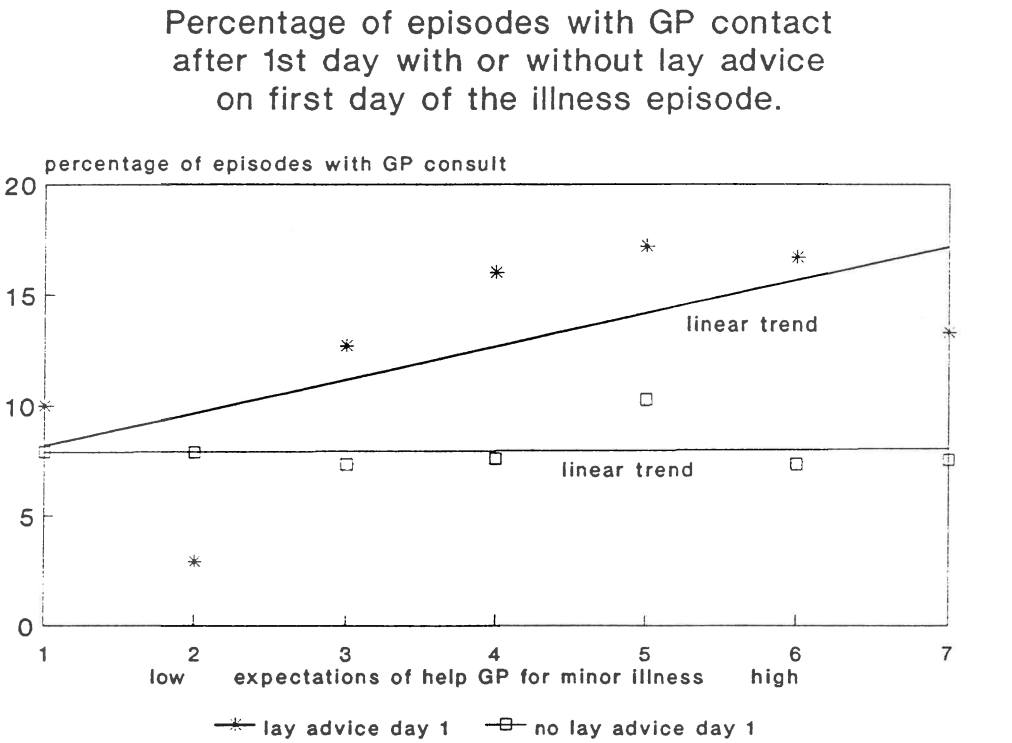

figure 2.