Living with a partner and health care use – results from the MONICA survey Augsburg in Southern Germany

Partnerschaft und Inanspruchnahme medizinischer Leistungen – Ergebnisse des MONICA Surveys Augsburg in Süd-Deutschland

Abstract

Objective: Several studies have shown that social relationships are associated with health care use. This study aims to test if and to which extent a proximal element of social relationships, particularly living together with a partner, influences the health care utilisation in the same way as a distal element such as group membership.

Methods: On the basis of a representative random sample of a southern German population (4856 participants), the associations were assessed between the following groups of variables: number of consultations with the general practitioner or internists, type of social relationships (living with a partner, friends, relatives, group memberships), need (evaluated and perceived health status), socio-demographic variables.

Results: All analyses showed associations between living with a partner and health care utilisation. Individuals living with a partner had lower levels of utilisation than individuals not living with a partner (mean: 4.3 vs. 5.2). These associations persisted after controlling for socio-demographic and need variables. For the other indicators of social relationships, though, there were no significant associations with outpatient visits.

Conclusions: Distinguishing between different types of social relationships is important for disentangling the overall effects of social relationships on health care utilisation. Also, the empirical findings confirm that health care research should not be restricted to medical variables, but should also include psycho-social factors.

Keywords: social relationships, social networks, health care utilisation

Zusammenfassung

Zielsetzung: Zahlreiche Studien zeigten bereits einen Zusammenhang zwischen sozialen Beziehungen und der Inanspruchnahme medizinischer Leistungen. Ziel dieser Studie ist es, zu überprüfen, ob und wieweit ein proximales Element sozialer Beziehungen, insbesondere das Zusammenleben in einer Partnerschaft, sich in gleiche Weise auswirkt wie ein distales Element wie beispielsweise die Mitgliedschaft in Gruppen oder Vereinen.

Methodik: Anhand einer süddeutschen Stichprobe (4856 Untersuchungsteilnehmer) wurde untersucht, welche Zusammenhänge zwischen den folgenden Variablengruppen bestehen: Anzahl der Konsultationen bei Allgemeinarzt oder Internist, soziale Beziehungen (Zusammenleben mit Partner, Freunde, Verwandte, Mitgliedschaft in Gruppen oder Vereinen), subjektiver und objektiver Hilfebedarf (selbst eingeschätzter Gesundheitszustand, vom Arzt festgestellte chronische Krankheiten), soziodemographische Variablen.

Ergebnisse: In allen Analysen konnten signifikante statistische Assoziationen zwischen dem Indikator ‘Leben mit Partner’ und den Arztbesuchen festgestellt werden. Personen mit dieser Partnerschaft konsultieren seltener einen Allgemeinarzt oder Internisten als Personen ohne (Medi-
Introduction

The association between social relationships and health care utilisation has been examined in a number of national and international studies. Generally, individuals with low social ties tend to be more intensive users of primary health care [1], mental health care [2] and nursing home [3], or have an increased utilisation of somatic emergency departments [4]. Besides the quantity of social relationships, type and quality of social relationships are related to health care utilisation, and marital status plays a central role. Some studies show that having a spouse is associated with shorter duration of hospitalisations [5], [6] or lower rates of nursing home utilisation [6]. Local areas with a small proportion of people living alone have lower rates of acute hospitalisation due to poor mental health [7]. Another study indicates that marital dissolution increases the likelihood for mental and physical health disorders, and consequently for the utilisation of mental health services [8]. In Germany, we were able to find only one comparable study: For the study population of adults in a north-eastern German region, it showed that living with a partner decreased outpatient care utilisation, and that those who have a number of chronic diseases and live alone have the highest number of outpatient care visits [1].

The causal interpretation of the association between living with a partner and health care use is primarily based on social and physiological explanations by which social relationships might influence the health status [9], [10], [11]. The social approach refers to the concept of “social support” which assumes that social ties are able to moderate or buffer deleterious health effects of stress situations. The physiological explanation describes the consequences of social isolation or disintegration as a strenuous situation to which the organism responds by decreasing its health status; notwithstanding of the presence of social support. As health status is the strongest predictor of health care utilisation [12], [13], we apply the aforementioned approaches to explain the association between social relationships and health care use: strong social ties result in an improved health status and consequently in a lower utilisation of health services. Furthermore, we hypothesise that the impact of social relationships on health care utilisation increases with the strength of social ties. Hence, living with a partner, in contrast to other types of social relationships, plays a central role for the health care use.

Little is known about the relevance of partnership status relative to other types of social relationships, such as the number of relatives or group membership. The study presented here aims to examine the association between social relationships and health care utilisation in more detail. First, we investigated whether health care utilisation is associated with each of the five different forms of social relationships: living alone, number of friends, number of relatives, contacts with family and friends, group membership. Second, we tested the hypothesis that living together with a partner is more strongly associated with health care use than other types of social relationships.

Methods

The data were derived from the third population-based MONICA (Monitoring trends and determinants on Cardiovascular Diseases) Augsburg (Southern Germany) survey conducted between 1994 and 1995. The MONICA Augsburg project was part of the multinational WHO MONICA project and the design of the project has been described in detail elsewhere [14]. Briefly, the cross-sectional survey was carried out in the city of Augsburg and the surrounding communities of Augsburg and Aichach-Friedberg in order to estimate the prevalence and distribution of cardiovascular risk factors among men and women. Altogether 4856 persons (2405 men, 2451 women) aged 25-74 years participated in the MONICA-survey 1994/1995.

A modified version of the Berkman and Syme [15] Social Network Index (SNI) was used to measure social relationships. This index comprises the following five components: (a) living alone or with a partner: 'What is your marital status?'; (b) number of close friends: ‘How many friends do you have, that you feel close to and with whom you can talk to about personal matters?'; (c) number of close
relatives: ‘How many relatives do you have that you feel close to (excluding children)?’; (d) number of contacts with these relatives and friends: ‘How many of your close friends or relatives do you see at least once a month?’; and (e) group membership: ‘Do you belong to any of the groups below (e.g. social or charity group, athletic club), and how active are you in such a group?’.

In the present analysis, each of these five components is analysed individually to identify the relevance of each particular type of social relationships relative to other types.

Additionally, a social support index (SSI) was computed as suggested by Klein [16]. Four questions regarding emotional and instrumental support were included in the survey, covering two domains: sharing of private feelings and problems with someone else, trusting another person if support is really needed. The following answering categories were provided: nobody, spouse/partner, friend, mother/father, children, other persons. The SSI gives the average number of persons providing emotional and/or instrumental support, thus assessing the qualitative aspect of social relationships [17].

Health care utilisation was measured by visits to general practitioners (GPs) and internists. In the interview, respondents were asked if they had visited a GP or internist in the last 12 months, and (if the answer was ‘yes’) how often they have visited them in the last year.

The Behavioral Model of Health Services Utilisation [12] was used to guide our selection of covariables, which might mediate or confound the association between social relationships and health services utilisation. The model states that utilisation of health care is a function of predisposing, enabling, and need factors. Predisposing factors were gender, age, education. Enabling factors were per capita income (in Deutsche Mark, DM) and health insurance (private or compulsory). ‘Need for health care’ was addressed by differentiating between perceived and evaluated need. ‘Perceived need’ was assessed by self-rated health (SRH), measured with a single question (‘How do you rate your health in general?’) on a 5-point Likert-type scale, ranging from ‘very good’ to ‘very poor’. The indicator ‘self-rated health’ has a long tradition in epidemiological research, and it has been shown repeatedly that it is a good predictor for future morbidity and mortality [18]. ‘Evaluated need’ was assessed in the following way: Respondents were asked if they have ever been diagnosed by a physician with some diseases, for instance diabetes or hypertension. They were also asked if they had experienced different chronic diseases within the 12 months previous to the interview. As proposed by Lam et al. [19], the number of these diseases was included as well.

Simple descriptive analyses were conducted using Kruskal-Wallis, Spearman’s Rho and Wilcoxon statistics to test for differences. Furthermore, the Bonferroni method was used to adjust P-values for multiple comparisons. Since our outcome of total physician visits exhibited a skewed distribution, traditional linear models were inappropriate. Therefore, a negative binomial model was used to assess the associations between the independent variables on one side and the physician visits on the other [20], [21]. Given the non-linearity of the negative nominal model, the estimated β coefficients are not directly interpretable. Transformation to rate ratios (RR) were performed, (i.e. exp(β)), which describes the percent change in the outcome associated with a one-unit increase in the predictor.

In addition to rate ratios (RR), standardised percent changes were computed, which describe ‘...the percentage change in the expected count for a [x] unit change in x, holding other variable constant...’ [22]. Standardised percent changes were computed because they allow a direct comparison of the impact that different indicators for social relationships have on the health care utilisation.

Two successive models were estimated accounting for different confounders. The first model includes the following independent variables: gender, age, living with partner, number of relatives, number of friends, number of contact with friends or relatives, group membership. The second model added the following variables (in addition to the model 1 predictors): educational level, per capita income, health insurance, perceived need for health care (self rated health), evaluated need for health care (number of chronic diseases).

Results

The description of the study population is summarised in Table 1. Most of the respondents had a lower educational level, i.e. primary education or no formal degree (63.33%). About 33% of the sample had a per capita income of more than 2000 DM. The income distribution, thus, deviates from the overall income distribution in Germany, because data were gathered in an affluent region of Germany. The majority of the sample had a compulsory health insurance (90.06%) and had visited a GP or internists during the past 12 months (80.12%). On average, people had a social support index (SSI) of 2.1 (i.e. close to the middle value between the lowest level ‘0’ and the highest level ‘4’). About 76% lived with a partner. The respondents had on average 5.0 close relatives and 3.4 close friends, and during a month they saw these relatives or friends about 4.1 times. Three-quarter reported a group membership. On average, the respondents had 1.8 chronic diseases, and the mean of the 5-point self-rated health-scale was 2.5.
Table 1: Description of the study population

|                          | n  | in %  | Mean (stand. dev.) |
|--------------------------|----|-------|--------------------|
| Total                    | 4856 |       |                    |
| Gender                   |     |       |                    |
| Male                     | 2405 | 49.53 |                    |
| Female                   | 2451 | 50.47 |                    |
| Age (years)              |     |       | 49.75 (14.11)      |
| Educational level        |     |       |                    |
| Primary                  | 3072 | 63.33 |                    |
| Secondary                | 963  | 19.85 |                    |
| Tertiary                 | 816  | 16.82 |                    |
| Per capita income        |     |       |                    |
| 111-749 DM (Deutsche Mark)| 702  | 17.19 |                    |
| 750-1199 DM              | 923  | 22.60 |                    |
| 1200-1499 DM             | 400  | 9.79  |                    |
| 1500-1999 DM             | 693  | 16.97 |                    |
| 2000-8000 DM             | 1366 | 33.45 |                    |
| Health Insurance         |     |       |                    |
| Private                  | 481  | 9.94  |                    |
| Compulsory               | 4357 | 90.06 |                    |
| Visits to GPs or internists (past 12 months) |     |       |                    |
| Yes                      | 3864 | 80.12 |                    |
| No                       | 959  | 19.88 |                    |
| Number of visits (complete sample) | | | 4.47 (6.10) |
| Social Support Index (SSI) |     |       | 2.11b (0.79)      |
| Components of the SNI    |     |       |                    |
| Family status            |     |       |                    |
| Living alone             | 1147 | 23.62 |                    |
| Living with partner      | 3709 | 76.38 |                    |
| Number of relatives      | 4504 | 4.97  (3.32) |
| Number of friends        | 4509 | 3.43  (2.67) |
| Number of contacts       | 4506 | 4.14  (3.02) |
| Group membership         |     |       |                    |
| No                       | 1076 | 24.56 |                    |
| Yes                      | 3305 | 75.44 |                    |
| Need                     |     |       |                    |
| Self rated health        | 4609 | 2.53c (0.86) |
| Number of chronic diseases | 4856 | 1.81  (1.65) |

a Available sample size
b Mean value of the range between '0' (low social support) and '4' (high social support)
c Mean value of the range between '1' (very good) and '5' (very poor)

Table 2 shows the bivariate associations between utilisation of GPs or internists on one side and the independent variables on the other. Women consulted these physicians more often than men. Utilisation increased with age, lower education was associated with higher utilisation, but concerning per capita income no clear gradient was found. Participants with compulsory health insurance had more physician contacts than the privately insured. The components of the social network index revealed the following picture: living alone is associated with higher utilisation; increasing number of close relatives, close friends and contacts with them is associated with decreasing utilisation. Also, being engaged in a group is associated with fewer consultations. Concerning need, higher 'subjective need' (poorer self rated health) and higher 'evaluated need' (increasing number of chronic diseases) are both associated with increased utilisation.
The multivariable analyses are shown in Table 3. In model 1, the negative binomial model only includes the following independent variables: the components of the social network index, the social support index, age and gender. Model 2 added further predisposing, enabling and need factors: educational level, per capita income, health insurance (compulsory vs. private), and need for health care. Model 1 shows a significant association between family status and utilisation of GPs or internists: As compared with people living alone, people living with a partner visited physicians 14 percent less often within the last year (RR=0.86; 95%-CI: 0.79-0.94). Pseudo R² was 0.02. In model 2, this association persisted after controlling for further predisposing, enabling and need factors. Utilisation was also increased in the following groups: women (as compared with men), higher age groups (as compared with lower age groups), compulsory health insurance (as compared with private), poor self assessed health (as compared with good), many chronic diseases (as compared with few). Including the additional variables in model 2, significantly improved model fit (Wald test statistic χ²: 584.38, Pseudo R²=0.05). The last column of Table 3 shows the standardised coefficients of the association between physician consultations and social relationships. They reveal that living with a partner is more strongly associated with the number of GPs or internists visits than other components of the SNI.

### Table 2: Bivariate analyses with the dependent variable ‘visits to GPs and internists’

| Gender               | Visits to GPs and internists (past 12 months) |
|----------------------|-----------------------------------------------|
|                      | Mean (stand. dev.)                           | Test Statistic<sup>a</sup> |
| Male                 | 4.15 (5.88)                                   | -5.81<sup>b</sup>          |
| Female               | 4.78 (6.29)                                   | 0.35<sup>c</sup>           |
| Age (years)          |                                               |                              |
| Educational level    |                                               |                              |
| Primary              | 5.12 (6.65)                                   |                              |
| Secondary            | 3.64 (5.09)                                   |                              |
| Tertiary             | 2.99 (4.48)                                   | 230.41<sup>d</sup>          |
| Per capita income    |                                               |                              |
| 111-749 DM           | 4.76 (6.43)                                   |                              |
| 750-1199 DM          | 4.08 (5.62)                                   |                              |
| 1200-1499 DM         | 3.97 (5.33)                                   |                              |
| 1500-1999 DM         | 4.44 (5.78)                                   |                              |
| 2000-8000 DM         | 4.13 (5.96)                                   | 23.68<sup>d</sup>           |
| Health Insurance     |                                               |                              |
| Private              | 2.60 (4.31)                                   |                              |
| Compulsory           | 4.68 (6.24)                                   | -10.53<sup>b</sup>         |
| Social Support Index (SSI) |                           | -0.12<sup>c</sup> |
| Components of the SNI|                                               |                              |
| Family status        |                                               |                              |
| Living alone         | 5.15 (6.57)                                   |                              |
| Living with partner  | 4.26 (5.93)                                   | 4.09<sup>b</sup>           |
| Number of relatives  |                                               | -0.04<sup>c</sup>          |
| Number of friends    |                                               | -0.04<sup>c</sup>          |
| Number of contacts   |                                               | -0.09<sup>c</sup>          |
| Group membership     |                                               |                              |
| No                   | 4.85 (6.57)                                   | 3.63<sup>b</sup>           |
| Yes                  | 4.18 (5.78)                                   |                              |
| Need                 |                                               |                              |
| Self rated health    |                                               | 0.35<sup>c</sup>           |
| Number of chronic diseases |                               | 0.48<sup>c</sup> |

* p<0.05  ** p<0.01  
<sup>a</sup>Bonferroni-adjusted  <sup>b</sup>Wilcoxon  <sup>c</sup>Spearman’s Rho  
<sup>d</sup>Kruskal-Wallis
### Discussion

The bivariate analyses showed that all indicators of social relationships included in this study are significantly associated with the number of physician consultations, but in the multivariable analyses only ‘living with a partner’ showed a significant influence on this measure of health care utilisation. Living with a partner decreases the likelihood of consulting a general practitioner or an internist. Other types of social relationships had no further effects on the rate of utilisation. In a second step, we investigated relative effects of partnership status and we found that ‘living with a partner’ had a higher influence on the number of physician consultations than other components of the social relationships. These findings clearly indicate that partnership has an important influence on the frequency of physician consultations. Compared to other studies, we can state that living alone increases the likelihood of health care utilisation [1], [8]. However, the strength of the relation between partnership and health care use is not as large as reported in previous studies. Furthermore, our results confirm the expectation that it is important to distinguish different types of relationships if the association between health care utilisation and social relationships is considered.

|                          | Model 1 |        |        | Model 2 |        |        | %  |
|--------------------------|---------|--------|--------|---------|--------|--------|----|
|                          | RR      | 95% Conf. Int. | RR      | 95% Conf. Int. | percent change |
| Gender                   |         |        |        |         |        |        |    |
| Male                     | 1.00    |        | 1.00   | 1.00    |        |        |    |
| Female                   | 1.20**  | 1.12-1.29 | 1.15**  | 1.07-1.24 | 15.1   |        |    |
| Age (years)              |         |        |        |         |        |        |    |
| 25-34                    | 1.00    |        | 1.00   |         |        |        |    |
| 35-44                    | 1.16*   | 1.03-1.29 | 0.99    | 0.89-1.11 | -0.8   |        |    |
| 45-54                    | 1.63**  | 1.46-1.83 | 1.12    | 0.99-1.25 | 11.5   |        |    |
| 55-64                    | 2.25**  | 2.01-2.52 | 1.24**  | 1.10-1.40 | 24.1   |        |    |
| 65-74                    | 2.86**  | 2.54-3.22 | 1.66**  | 1.46-1.88 | 66.1   |        |    |
| Educational level        |         |        |        |         |        |        |    |
| Primary                  |         |        |        | 1.00    |        |        |    |
| Secondary                | 0.94    | 0.86-1.03 | 0.86    | 0.79-0.94 | -6.2   |        |    |
| Tertiary                 | 0.89*   | 0.80-0.99 | 0.89    | 0.79-0.94 | -10.8  |        |    |
| Per capita income        |         |        |        |         |        |        |    |
| 111-749 DM               |         |        |        | 1.00    |        |        |    |
| 750-1199 DM              | 1.001   | 0.89-1.12 | 1.05    | 0.91-1.21 | 5.3    |        |    |
| 1200-1499 DM             | 1.07    | 0.95-1.21 | 1.07    | 0.95-1.21 | 7.3    |        |    |
| 1500-1999 DM             | 1.04    | 0.93-1.16 | 1.04    | 0.93-1.16 | 4.1    |        |    |
| 2000-8000 DM             |         |        |        |         |        |        |    |
| Health Insurance         |         |        |        |         |        |        |    |
| Private                  | 1.00    |        | 1.00   |         |        |        |    |
| Compulsory               | 1.20**  | 1.07-1.36 | 1.20    | 1.07-1.36 | 20.4   |        |    |
| Social Support Index (SSI)| 0.996   | 0.95-1.05 | 1.05    | 0.998-1.10 | 5.0    |        |    |
| Components of the SNI    |         |        |        |         |        |        |    |
| Family status            |         |        |        |         |        |        |    |
| Living alone             | 1.00    |        | 1.00   |         |        |        |    |
| Living with partner      | 0.86**  | 0.79-0.94 | 0.89*   | 0.81-0.98 | -10.8  |        |    |
| Number of relatives      | 1.01    | 0.99-1.02 | 1.01    | 0.99-1.02 | 0.6    |        |    |
| Number of friends        | 0.99    | 0.97-1.004 | 0.99   | 0.98-1.01 | -0.5   |        |    |
| Number of contacts       | 0.998   | 0.98-1.01 | 1.003   | 0.99-1.02 | 0.3    |        |    |
| Group membership         |         |        |        |         |        |        |    |
| No                       | 1.00    |        | 1.00   |         |        |        |    |
| Yes                      | 0.95    | 0.88-1.03 | 0.99    | 0.91-1.07 | -1.3   |        |    |
| Need                     |         |        |        |         |        |        |    |
| Self rated health        | 1.27**  | 1.22-1.33 | 1.27    | 1.22-1.33 | 27.2   |        |    |
| Number of chronic diseases| 1.23**  | 1.20-1.26 | 1.23    | 1.20-1.26 | 22.7   |        |    |
| Wald test statistic      | 584.38**|        |        |         |        |        |    |
| Pseudo R2                | 0.02    |        | 0.05   |         |        |        |    |

* ps0.05    ** ps0.01
care utilisation and social relationships is investigated. To our knowledge there is no publication yet looking at this point in more detail. The previous studies have either only looked at the influence of partnership and marriage respectively on health care utilisation, or they have examined the association between social relationships and health care utilisation in a very general way (finding associations concerning 'living with a partner' only as a 'by-product' without putting much emphasis on this finding). Our findings could be in line with different explanatory approaches. On the one hand, there is no social isolation or disintegration in a well-functioning partnership, and each partner might benefit from it with regard to his or her health status. The concept of "social support" could not be confirmed in the multivariable analyses. Therefore, we assumed that living together is not always associated with social support. However, this would not explain why 'living with a partner' is affecting health care utilisation even after controlling for health status. The 'Compensatory-Hierarchical-Model' by Cantor [23] might be more helpful in explaining our findings: Following this model, spouses initially seek help from each other, particularly if they are not seriously sick. People not living with a partner consult a physician directly, irrespective of the severity of their symptoms. A third potential explanation could be that the spouse controls the partner's every day activities [24], and thus could also help to avoid physician visits.

Several strengths and limitations of our study have to be taken into account. First, a major limitation of our study consists in the age of the data (12 years). However, we believe that our study is valuable because it is rather analytical than descriptive. We also assume some temporal stability in the correlation of health care use and social relationships. Second, the questions concerning social relationships (number of friends, number of relatives, contacts with family and friends, group membership) were asked in a questionnaire filled out by the respondents at home without the presence of an interviewer, leading to problems of missing answers. Third, the target variable "general practitioner visits" is a self-reported retrospective evaluation of study subjects and might be biased by their remembrance. Fourth, since a cross-sectional design was used, we are not able to infer any causal ordering between the variables concerning social relationships, need and health care utilisation. Fifth, the data do not allow the inclusion of other variables of the Andersen Model (for example 'supply of medical care'). Finally, we did not take in account the potential influence of widowhood on the association between marital status and health care use. Compared to their married counterparts, the widowed tended to be older, without partnership, more seriously ill and to visit a physician more frequently. In order to reduce this 'widowhood-bias', we controlled for the age variable. On the other hand, the data provide an excellent opportunity for studying the association between social relationships and health care utilisation in a large population-based sample.

Besides the general influence of social aspect, our results demonstrate that specific forms of social relationships show different effects on health care utilization. Living with a partner showed the strongest influence on the number of visits to GPs. Based on this result, we assume that the strength of social relationships is a determining factor explaining health care use. We hope the present study will contribute to raising awareness about the relevance of social aspects in health policy. Public health planners should include this given factor in their future programmes targeted at supporting social cohesion (e.g. promoting support groups). Because social relationships might decrease health care use, which is not medically indicated, our results might also be relevant to the current debate about reducing health care costs.

Concerning further research, we would like to stress that our analyses give new empirical evidence to the argument that primary health care utilisation cannot be just explained by medical determinants, but that it is a complex function of interacting medical, socio-economic and also psychosocial determinants such as 'living with partner'.

Notes

Conflicts of interest

None declared.

References

1. Baumeister SE, Alte D, John U. Inanspruchnahme medizinischer Leistungen: Welche Rolle spielt die soziale Unterstützung? - Ergebnisse der Study of Health in Pomerania (SHIP). Gesundheitswesen. 2004;66:175-9.
2. Pescosolido BA, Wrigth E, Alegria M, Vera M. Social Networks and Patterns of Use Among the Poor with Mental Health Problems in Puerto Rico. Med Care. 1998;36(7):1057-72.
3. Kersting RC. Impact of Social Support, Diversity and Poverty on Nursing Home Utilization in a Nationally Representative Sample of Older Americans. Soc Work in Health Care. 2001;33(2):67-87.
4. Andren KG, Rosenqvist U. An ecological study of the relationship between risk indicators for social disintegration and use of a somatic emergency department. Soc Sci Med. 1987;25(10):1121-7.
5. Iwashyna TJ, Christakis NA. Marriage, widowhood, and health care use. Soc Sci Med. 2003;57:2137-47.
6. Lewis WF. Marital Status and Its Relation to the Use of Short-Stay Hospitals and Nursing Homes. Public Health Rep. 1984;99(4):415-24.
7. Tibaldi G, Munizza C, Pasian S, Johnson S, Salvador-Carulla L, Zucchi S, Cesano S, Testa C, Scala E, Pinciaroli L. Indicators predicting use of mental health services in Piedmont, Italy. J Ment Health Policy Econ. 2005;8(2):95-106.
8. Prigerson HG, Maciejewski PK, Rosenheck RA. The Effects of Marital Dissolution and Marital Quality on Health and Health Service Use Among Women. Med Care. 1998;37(9):858-73.
9. Berkman LF, Glass T. Social Integration, Social Networks, Social Support, and Health. In: Berkman LF, Kawachi I, editors. Social Epidemiology. Oxford: University Press; 2000. p. 137-73.

10. Cohen S. Social Relationships and Health, Am Psychol. 2004;59(8):676-84.

11. House JS, Landis KR, Umberson D. Social Relationships and Health. Science. 1988;241(4865):540-5.

12. Andersen RM. Revisiting the behavioural model and access to medical care: does it matter? J Health Soc Behav. 1995;36(1):1-10.

13. Mechanic D. Correlates of physician utilization. Why do major multivariate studies of physician utilization find trivial psychosocial and organizational effects? J Health Soc Behav. 1979;20(4):387-96.

14. Keil U, Liese AD, Hense HW, Filippiak B, Doering A, Stieber J, Loewel H. Classical risk factors and their impact on incident non-fatal and fatal myocardial infarction and all-cause mortality in southern Germany. Results from the MONICA Augsburg cohort-study 1984-1992. Monitoring Trends and Determinants in Cardiovascular Diseases. Eur Heart J. 1998;19(8):1197-207.

15. Berkman LF, Syme SL. Social networks, host resistance, and mortality: a nine-year follow-up study of Alameda County residents. Am J Epidemiol. 1979;109(2):186-204.

16. Klein T, Loewel H, Schneider S, Zimmermann M. Soziale Beziehungen, Stress und Mortalität. Z Gerontol Geriatr. 2002;35(5):441-9.

17. Wills TA, Filer M. Social networks and social support. In: Baum A, Revenson TA, Singer JE, editors. Handbook of Health Psychology. New Jersey: Lawrence Erlbaum; 2001. p. 209-34.

18. Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. J Health Soc Behav. 1997;38(1):21-37.

19. Lam CL, Fong DY, Launder U, Lam TP. The effect of health-related quality of life (HRQOL) on health service utilization of a Chinese population. Soc Sci Med. 2002;55(9):1635-46.

20. Diehr P, Yanez D. Methods for analyzing health care utilization and costs. Annu Rev Public Health. 1999;20:125-44.

21. Long JS. Regression models for categorical and limited dependent variables. Thousand Oaks: Sage; 1997.

22. Long JS, Freese J. Regression Models for Categorical Dependent Variables Using Stata. Revised Edition. Texas: Stata Corporation; 2003. p. 255.

23. Cantor MH. Neighbors and friends: An overlooked resource in the informal support system. Res Aging. 1979;1(4):434-63.

24. Umberson D. Family status and health behaviours: social control as a dimension of social integration. J Health Soc Behav. 1987;28(3):306-19.

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