

Is level of social support associated with health behaviours modifying cardiovascular risk? Results of the WOBASZ study

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Abstract

Background: Psychosocial risk factors affected the human health both by autonomic, neuroendocrine and immunological mechanisms and by the influence on human lifestyle. Lack of social support can reflect the person's lifestyle to more unhealthy.

Aim: To assess if low, compared to high social support level (SSL), contributes to the unhealthy lifestyle in Polish general population.

Methods: The random sample of Polish population of 6164 men and 6915 women, aged 20–74, filled-in the Berkman and Syme questionnaire in 2003–2005 in the frame of National Multicenter Health Survey (WOBASZ).

Results: 31% of men and 39% of women had low SSL and they more often had high cardiovascular risk, depressive symptoms and cardiovascular disease risk factors, especially women. Men and women with low SSL more often smoked cigarettes than those with high SSL, rarely try to quit smoking, made regular physical activity, and rarely self-measured their blood pressure. Additionally men more often drank alcohol ≥ 30.0 g/day. They also more often did not take the prescribed medication, although they bought them. Out of unhealthy elements, lack of regular physical activity and blood pressure self-measuring were significantly and independently associated with SSL in both genders and additionally smoking habit and lack of quit smoking in the past in women.

Conclusions: Persons with low SSL had more unhealthy lifestyle than those without. In Polish population the low SSL played a greater role in creating the cardiovascular risk in women than in men.

Key words: social support, lifestyle, health behaviour, cross-sectional study

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INTRODUCTION

There is a growing evidence suggesting the independent contribution of psychosocial factors to cardiovascular risk development [1]. People involved in positive relationships live longer than those with low social support [2]. It has been documented that lack of social support, accompanied by low socioeconomic status, stress and depression, was significantly related to the first episode of coronary artery disease (CAD) and worsened the prognosis and course of documented CAD. Moreover such factors may hinder complying with physician recommendations, change of lifestyle and the promotion of health [3, 4].

The term of social support was derived from psychological researches conducted in US, UK and Canada's academic centres in the seventies. Among many social support (SS) definitions, the simplest one has been proposed by Sarason [5].

The term of SS according to Sarason means assistance which is available to the individual in difficult and stressful situations.

High level of SS may be associated with lower morbidity from cardiovascular disease (CVD) and other chronic diseases. It is due to its positive impact on health behaviours, among them low smoking frequency, greater physical activity and compliance with recommendations of physician concerning modification of profile for CVD risk factors [2]. It should be emphasised that the association between the level of SS and CVD risk factors or health behaviours was not confirmed in some studies. Moreover part of studies was conducted on small groups, which may have a significant impact on derived conclusions [2]. There is no data of wide research description concerning this subject, based on the large population study in Poland.

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The aim of the study was to evaluate the lifestyle and health behaviours of low social support level (SSL) individuals compared to those with high SSL in adult Polish population.

METHODS

Study population

The evaluation of SSL among them frequency of low and high support level has been based on results from random sample of Polish population aged 20–74 examined in 2003–2005 in National Multicenter Health Survey (WOBASZ) cross-sectional study. The aims, methodology and the sampling method used in the study conducted by Institute of Cardiology in cooperation with Medical University of Gdansk, Medical University of Lodz, Poznan Medical University, Medical University of Silesia in Katowice and Jagiellonian University in Krakow, have been described previously [6, 7]. Two-step randomisation stratified for voivodeship and the commune size was applied in the study. The set of two small communes (< 8 thousand of residents), 2 medium size communes (8–40 thousand of residents) and 2 large communes (> 40 thousand of residents) with 100 men and 100 women in each commune (overall 19,200 subjects) were randomly selected from each of 16 voivodeships [7]. The level of response rate, excluding individuals unavailable for examination (death or changed address of residence — 1578 subjects), was 74% for men and 79% for women respectively. Individuals underwent questionnaire assessment, routine physical examination, anthropometric and laboratory measurements.

The level of socioeconomic status (SES) was estimated by tercile distribution of the product of education (8 levels) and income (6 levels).

10-year risk of fatal CVD was assessed according to the SCORE scale [8]. Individuals who were less than 40 years old were excluded from the analysis. The high risk group included individuals with cardiovascular incidence history, stroke, diabetes mellitus (DM), or with significantly increased single risk factor (as Chol-C \geq 8 mmol/L, LDL-C \geq 6 mmol/L or severe hypertension \geq 180/110 mm Hg).

Individuals with CAD were selected according to previous history of hospitalisation for acute coronary syndrome, performed percutaneous transluminal coronary angioplasty or coronary artery bypass grafting and myocardial infarction history, or CAD diagnosis without hospitalisation. Hypertensive subjects were defined as subjects with the mean blood pressure (BP) \geq 140/90 mm Hg (calculated from the second and third measurement from a single visit) or as anti-hypertensive therapy treated individuals. Subjects with hypercholesterolemia were defined as subjects who had concentrations of total cholesterol \geq 5 mmol/L or LDL-cholesterol \geq 3 mmol/L or those who had been receiving hypolipidemic drugs.

Subjects with DM were defined as subjects with fasting glucose concentration \geq 7.0 mmol/L or diabetes in the hi-

story. The obese individuals were diagnosed where their body mass index \geq 30 kg/m². Smokers were defined as those who smoked regular at least one cigarette per day. Individuals with at least 10 points collected from Becke Depression Inventory (BDI) questionnaire, were recognised as those who had symptoms of depression.

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The evaluation of social support

The Berkman and Syme questionnaire composed of 31 questions estimating elements such as marital status, contacts with friends and relatives and various organisations membership, has been applied to assess the SSL in examined population [9]. Answers of respondents received codes or points and suitable code tables were used to identified low, medium, high, and very high SSL in examined population. Methodology applied in the study was in agreement with WHO MONICA Mopsy Study guidelines [10]. The level of social support was evaluated in 6164 men and 6915 women. Received score allowed to classify individuals into low, medium and high social support groups. Data from individuals with low and high SSL, after intentional excluding those with medium social status level, were analysed in this study. Both preliminary results and methodology of psychological evaluation have been described previously [11].

Lifestyle evaluation

Lifestyle elements based on questionnaire data, included unhealthy behaviours such as regular cigarettes smoking (at least 1 cigarette/24 h), lack of attempts to quit smoking in the past (smokers only), excessive alcohol consumption (> 30.0 g/24 h and > 15.0 g/24 h for men and women respectively), lack of regular physical activity (lack of physical exercises lasting at least 30 min), lack of BP self-monitoring (lack of BP measurement at least once per year), failure to comply physician recommendations (irregular intake of prescribed medications only with respect to individuals with hypotensive and hypolipidemic medications prescribed).

Statistical analysis

All analyses were performed on men and women groups separately. Results are shown as mean \pm SD or fractions. The diversity of lifestyle between both low and high SSL was compared by the means of χ^2 test; p value of < 0.05 was considered significant. The multivariate logistic regression model adjusted for age, sex, place of residence (the size of the commune), socioeconomic status, obesity, diabetes, CAD, hypertension and depressive symptoms was applied to test. All calculations and statistics were performed with Statistical Analysis System (SAS v 9.2).

Table 1. Population characteristic according to social support level (data not adjusted)

Analysed factors	Men			Women		
	Low social support	High social support	P	Low social support	High social support	P
N	1580	1763		2215	1580	
Age [years]	46.6 ± 16.3	45.2 ± 14.9	0.0028	48.0 ± 16.3	42.9 ± 12.5	< 0.0001
Commune size:			0.0007			NS
Small (to 8 thousand)	36.7%	31.0%		35.8%	33.0%	
Medium (8–40 thousand)	29.7%	33.0%		30.9%	32.7%	
Large (> 40 thousand)	33.6%	36.0%		33.3%	34.3%	
Socioeconomic status:			< 0.0001			< 0.0001
Low	36.2%	22.3%		37.5%	25.2%	
Medium	38.4%	46.2%		34.5%	31.9%	
High	25.4%	37.5%		28.0%	42.9%	
Obesity (BMI ≥ 30 kg/m ²)	17.5%	24.4%	< 0.0001	24.6%	22.0%	0.02
Smoking status (at least 1 cigarette/24 h)	42.1%	35.3%	< 0.0001	26.3%	21.2%	0.0017
Hypertension blood pressure ≥ 140/90 mm Hg or treatment)	42.0%	41.0%	NS	40.0%	26.0%	< 0.0001
Hypercholesterolaemia (cholesterol ≥ 5.0 mmol/L or LDL-cholesterol ≥ 3.0 mmol/L or treatment)	63.0%	71.0%	< 0.0001	65.4%	62.4%	0.0405
Diabetes mellitus (glucose ≥ 7.0 mmol/L or diabetes history)	7.1%	7.8%	NS	8.3	4.5	< 0.0001
Coronary artery disease (history)	14.3%	12.7%	NS	17.2%	10.5%	< 0.0001
Depressive symptoms (≥ 10 BDI points)	60.2%	39.8%	< 0.0001	71.6%	28.5%	< 0.0001
High 10-year risk of cardiovascular disease (≥ 5%)	51.2%	39.0%	< 0.0001	27.5%	12.7%	< 0.0001

RESULTS

The low SSL was identified in 31% men and 39% of women in the study group. Subjects with low SSL were significantly older compared to those with high SSL, more frequently belonged to low socioeconomic status group and were characterised by high 10-year risk of fatal CVD (Table 1).

The SSL was not associated with frequency of CAD, hypertension and DM in men, however was found to be significantly related with smoking addiction, hypercholesterolaemia, obesity and depressive symptoms frequencies in this group. Nevertheless, among women with low SSL the CAD, hypertension, DM, obesity, hypercholesterolaemia, depressive symptoms and smoking addiction were significantly more frequent (Table 1).

Compared to subjects with high SSL, individuals with low SSL were more often characterised by unhealthy lifestyle. Among 6 analysed features of “anti-health” lifestyle, 3 or more were noticed in 18.1% of low SSL men compared to 6% of men with high SSL ($p < 0.0001$) (in women 16.5% and 10.3%

respectively, $p < 0.001$). Very favourable lifestyle characterised by absence of any “anti-health” features was significantly less common in the group of low SSL (about 1/4 both men and women with low SSL) compared to individuals with high SSL (above 35%).

Compared to those with high SSL, men with low SSL more often smoked regular, consumed alcohol (> 30.0 g alcohol/24 h) and were physically inactive, also higher percentage of them declared no attempt to quit smoking and no BP self-monitoring during a year. Interestingly, men with high SSL more frequently did not comply with physician recommendations than low SSL men group (no intake of prescribed medications were documented in 12.1% men with low compared to 15.2% of those with high SS status, $p = 0.0133$) (Table 2). Similar trends were observed with respect to the women group. Compared to those with high SSL, women with low SSL more often smoked and were physically inactive, also higher percentage of them declared no attempts to quit smoking in the past and no BP self-monitoring during

Table 2. The frequency of analysed “anti-health” lifestyle elements present in individuals with low and high social status (data not adjusted)

Analysed elements of lifestyle	Men			Women		
	Low social support	High social support	P	Low social support	High social support	P
Lack of regular physical activity (no physical exercises lasting \geq 30 min)	39.4%	26.2%	< 0.0001	43.4%	34.9%	< 0.0001
Excessive alcohol consumption (> 30.0 g/24 h — men; > 15.0 g/24 h — women)	8.3%	6.4%	0.0293	0.9%	0.8%	NS
Smoking status (at least 1 cigarette/24 h)	42.1%	35.3%	< 0.0001	26.3%	21.2%	0.0017
No previous attempts to quit smoking (% of individuals with no attempts of quit smoking)	9.1%	6.1%	0.0014	6.8%	4.5%	0.0027
Failure to comply with physician recommendations (no intake of prescribed and bought medications)	17.9%	12.3%	< 0.0001	22.2%	13.9%	< 0.0001
Lack of preventive blood pressure self-monitoring (no blood pressure measurement at least once a year)	39.4%	6.2%	< 0.0001	18.9%	15.5%	0.0022

a year. Moreover women with low SSL more frequently did not comply with physician recommendations than those with high SSL (no intake of prescribed medications were documented in 18.9% women with low vs. 15.5% women with high SSL, $p < 0.0022$) (Table 2).

Advanced age and lower socioeconomic status noted in individuals with low SSL accompanied by more frequently noticed CAD, hypertension, DM, obesity and depressive syndromes (only women group) may influence the health promotion activities in the studied population. By multivariate analysis, lifestyle elements such as lack of regular physical activity, BP self-monitoring, and also lack of attempts to quit smoking with respect to women group, found to be significantly and independently related to SSL in both gender groups (Table 3). Above factors, adjusted by interfering variables, increased the chance of low SSL by 85% in men and 43% in women with respect to lack of physical activity, and by 40% in both gender group with respect to lack of BP measurement. In women group lack of previous attempt to quit smoking increased the risk of concluding low SSL in the individual by 50%.

DISCUSSION

National Multicenter Health Survey WOBASZ revealed that high percentage (30–40%) of people in Polish population is characterised by low SSL, particularly with respect to women group.

It has been postulated that the influence of psychosocial factors on health is mediated by autonomic, neuroendocrine

mechanisms and immunological response on the one hand, and modification of health behaviours such as smoking, alcohol drinking, physical activity, sexual behaviours or dietary choices on the other [4, 12–14].

By multivariate analysis performed in the WOBASZ study we demonstrated the relation between low SSL and most of unhealthy behaviours including lack of regular physical activity, lack of preventive BP monitoring and lack of attempts to quit smoking in women group, and lack of regular physical activity, lack of BP measurement at least one a year in the group of men. Our results are in line with those obtained by Cheng et al. [15] who found that the role of social support in risk creating is greater in women than in the men group. Different social roles for men and women in the society affect their lifestyle in different way [16].

In this study multivariate analysis revealed that among unhealthy behaviours only lack of physical activity and lack of preventive BP self-monitoring proved to be independently and significantly associated with SSL in both men and women groups. Demonstration of lack or low physical activity by examined subject increased his/her probability to belong to low SSL. Similar results were obtained in Australian study conducted on 1278 individuals, where associations between physical inactivity and measure of social capital were analysed (evaluated upon 9 questions, collected information was about family and neighbourhood relations with respect to provide help or to be helped). Low level of social capital was associated with lack of physical activity [17]. The American cross-sectional study (Family Intervention Trial for Heart Health)

Table 3. Lifestyle elements depended probability for belonging to low social status level*

Factors	Men		Women	
	OR (95% CI)	P	OR (95% CI)	P
Regular physical activity:		< 0.0001		< 0.0001
Yes	1.00		1.00	
No	1.85 (1.58–2.16)		1.43 (1.24–1.66)	
Excessive alcohol consumption:		NS		NS
No	1.00		1.00	
Yes	1.20 (0.91–1.58)		1.03 (0.49–2.18)	
Smoking status:		NS		NS
Yes	1.00		1.00	
No	1.03 (0.88–1.21)		1.15 (0.96–1.37)	
Comply with physician recommendations:		NS		NS
Yes	1.00		1.00	
No	1.00 (0.62–1.62)		1.02 (0.57–1.85)	
Preventive blood pressure self-monitoring:		0.0005		0.001
Yes	1.00		1.00	
No	1.41 (1.16–1.70)		1.43 (1.16–1.77)	
Attempts to quit smoking:		NS		0.0183
Yes	1.00		1.00	
No	1.33 (0.99–1.78)		1.50 (1.07–2.102)	

*Values adjusted by age, sex, commune size, socioeconomic status, obesity, depressive symptoms, diabetes mellitus, coronary artery disease, hypercholesterolemia, hypertension, and “anti-health” lifestyle elements included in the table

that enrolled 501 family members of patients hospitalised for coronary heart disease in one of New York’s hospitals between 2005 and 2007, showed that structural support (group or organisations membership), adjusted for age, sex, race, marital status, and education was positively, independently associated with minutes of physical activity per week, whereas emotional support (support derived from family and friends) was positively related to number of days of physical activity per week [18]. The aim of next study was to evaluate the demographic, lifestyle, and psychosocial factors that predict improved physical activity among participants enrolled into CVD prevention, lifestyle intervention trial at one-year. In the study authors demonstrated that higher physical activity was positively associated with various factors, among them higher SSL [19].

There is existing data providing evidence for higher SS to decrease the morbidity of CVD via positive influence on health behaviours [2]. Organisational support (the support from members) gives the opportunity to discuss and to press for maintenance of specified directives or standards. Individual relationships and family support may be based on supplying of health information, emotional support, encouraging health promotion practice and instrumental support including healthy food preparation or accompany during everyday physical activity. Therefore the role of social relations in health promotion should be underlined [20].

Ford et al. [2] in the cross-sectional study NHANES III conducted on American population in 1988–1994, confirmed an inverse correlation between the frequency of membership relations and smoking addict, also between the frequency of individual relations and lack of monitoring of cholesterol concentration and inadequate fruit and vegetable consumption. In our study we also observed an inverse correlation between smoking addict and the SSL, however only in women group. Although men with low SSL also smoked significantly more frequent, after adjusting for interfering variables, association between smoking and SSL did not reach statistical significance in this group.

The role of SSL in recovery by changing lifestyle behaviours to more healthy has been recently confirmed by a EURO-ACTION project. This cluster randomised controlled trial regarding cardiovascular prevention and rehabilitation programme with clinical follow-up of 16 weeks was conducted on 10 thousand of coronary disease and coronary disease risk patients and their families from 8 countries (Denmark, France, Italy, Poland, Spain, Sweden, The Nederland and the UK) in 12 hospitals and 12 clinics [21]. Individuals participated in the program were found to improve their lifestyle including healthy diet, smoking cessation, better physical activity, better BP and cholesterol concentration monitoring. Moreover higher percentage of individuals has undergone cardio protective

therapy during the study. Both significant impact of family and relatives of programme members, and the role of support groups were underlined in the study.

CONCLUSIONS

Substantial percentage of subjects with low social status, particularly in women group, has been observed in Polish population. Both men and women with low SSL are characterised by more "anti-health" lifestyle compared to high SSL individuals. This phenomenon is mostly determined by unfavourable profile of cardiovascular risk factors among individuals with low SSL, with particular respect to women group. Therefore social relationships seem to play important role in actions involved in health promotion.

Conflict of interest: none declared

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Czy poziom wsparcia społecznego jest związany z zachowaniami zdrowotnymi modyfikującymi ryzyko sercowo-naczyniowe?

Wyniki badania WOBASZ

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Streszczenie

Wstęp: Uważa się, że psychospołeczne czynniki ryzyka oddziałują na zdrowie poprzez wpływ na mechanizmy autonomiczne, neuroendokrynne i odpowiedź immunologiczną, a także poprzez wpływ na zachowania zdrowotne. Niskie wsparcie społeczne może się wiązać z bardziej anty-zdrowotnym stylem życia.

Cel: Celem pracy była ocena stylu życia i zachowań zdrowotnych populacji osób dorosłych w Polsce w zależności od poziomu wsparcia społecznego (PWS).

Metody: Osoby włączone do próby losowej populacji polskiej (6164 mężczyzn i 6915 kobiet), w wieku 20–74 lat, wypełniły w latach 2003–2005 kwestionariusz Berkmana i Syme'a w ramach Wieloośrodkowego Ogólnopolskiego Badania Stanu Zdrowia (WOBASZ).

Wyniki: U 31% mężczyzn i 39% kobiet odnotowano niski PWS. U tych osób częściej obserwowano wysokie ryzyko sercowo-naczyniowe, objawy depresji oraz czynniki ryzyka chorób układu sercowo-naczyniowego, zwłaszcza u kobiet. Mężczyźni i kobiety z niskim PWS częściej niż z wysokim PWS palili tytoń, natomiast rzadziej podejmowali próby zaprzestania palenia tytoniu, kontrolowali swoje ciśnienie tętnicze krwi i regularnie ćwiczyli w czasie wolnym od pracy. Ponadto mężczyźni z niskim PWS częściej spożywali nadmierne ilości alkoholu. Czynniki stylu życia istotnie i niezależnie związanymi z PWS u obu płci okazały się brak regularnej aktywności fizycznej i brak okresowej kontroli ciśnienia tętniczego krwi, a u kobiet dodatkowo nałóg palenia tytoniu i brak w przeszłości prób podejmowania rzucania palenia.

Wnioski: Osoby z niskim PWS częściej charakteryzowały się anty-zdrowotnym stylem życia niż osoby z wysokim PWS. W populacji polskiej niski PWS odgrywa większą rolę w kreowaniu ryzyka u kobiet niż u mężczyzn.

Słowa kluczowe: wsparcie społeczne, styl życia, zachowania zdrowotne, badanie przekrojowe

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