Social gradient in health-related quality of life among urban residents in Limassol, Cyprus: Research article

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Abstract

Background Social inequalities in health threaten social cohesion and, therefore, their investigation is an important research field. The reasons behind this phenomenon remain unclear. Monitoring the health of the population is necessary to identify health needs, design programs focused in people's needs and to evaluate the effectiveness of health policies.

Methods A descriptive correlation study with cross-sectional comparisons using primary data was applied. The study investigates the size and the extent of social inequalities in quality of life and health behaviours in Limassol, Cyprus. Data collection was done by door-to-door survey, in the form of interviews. The sample consisted of 450 residents aged 45-64 across 45 randomly selected neighbourhoods, that met the selection criteria. The tools used were: Demographic questionnaire, SF 36 Questionnaire - Quality of Life, IPAQ- International Physical Activity Questionnaire short form.

Results The social gradient seems to be appeared in all social indicators. As for the physical dimension of health, it seems to show strong relationship between quality of life with the education index. Regarding mental health dimension, the pattern of social gradient seems to be not so strong.

Conclusions Exploring social inequalities in quality of life, is a complex state influencing social physical and psychological state of health. It seems that being male, young, highly educated, with high income, working full time and having a mild physical activity, there is significant higher level of quality life in relation to others. Many studies show that gender affects the patterns of risk factors and that this has a different impact on quality of life.

Background

Social inequalities in health threaten social cohesion. Poverty reduction, provision of effective health care to citizens and improvement of the quality of life, are long-term goals ensuring social and economic cohesion [1, 2, 3].

Social inequalities in health have been widely investigated. The factors that appear to be correlated with this phenomenon remain unclear. Research on health inequalities in recent decades has devoted considerable effort to identifying specific social, environmental or behavioral factors (eg occupational status, physical activity) that explain the relationship between social status and health [4, 5, 6]. The environment where one lives, plays a crucial role in this matter. However, the existence of socio-economic disadvantage, psychosocial effects (social cohesion), health behaviors, gender can partially explain the social classification of health [3, 5, 6–8].

It is generally accepted that no single factor can explain these inequalities in health, due to the combined and Accumulative effect of risk factors over time and in different life domains [9]. It also seems that men and women are exposed differentially in these determinants or that are otherwise vulnerable to these determinants [10–12]. Women have lower mortality rates but, paradoxically, report higher levels of depression, psychiatric disorders and various chronic diseases than men [9, 11, 12].

Usually, there is a gradual, if not even linear, decreasing trend in the health status the lower the social status of the individual - this is not simply the case where poor health is confined to a single social group at the extreme end of the scale, while all other groups have relatively good health levels - this is referred to as social graduation [13].

Sometimes, the impact of the social gradient in health is expressed as shortfall - which basically is expressed as the number of lives that would not have been lost if all groups in society enjoyed the same standard of life, as those in the most advantageous position [13]. For example, the shortfall in life expectancy for women in the lowest income group was around 26.7 years, compared to women - belonging to the highest income group [14].

In addition, there is increasing interest in monitoring the quality of life through perceived health status (self-assessment of health). This measure has been shown through longitudinal studies to be related to the provision for subsequent hospitalization or mortality [15–18].

Monitoring the health of the population is vital for several reasons. The resulting information is laid necessary to identify health needs, design programs and to evaluate the effectiveness of health policies [15].

Impact in community nursing and public health

The existence of social inequalities in health is a challenge for public health. At the same time, public health is a core of work for all nurses. Nurses face the daily effects of social inequalities on the health and well-being of the communities they care for, such as inadequate access to health care services and increased morbidity and mortality rates. Because nurses are experiencing the impact of social determinants on health, both the patients they provide care to and the general population, have a clear stake in identifying and addressing the causes of "poor" health. Empowering people to get control of their lives, will help considerably to take control of their health and, having nursing presence beside them [19].

The results of this study can be utilized by community nurses by applying approaches aimed at reducing health inequalities, ensuring health and well-being, ensuring the effectiveness of initiatives and providing assistance to health providers and local authorities, in order to fulfill their obligations.

Community actors and local authorities should take into account the results of the research in order to take action in areas with the lowest values in people's quality of life by implementing programs aimed at ensuring the well-being of citizens.

Methods

Aim

The purpose of this paper is to investigate the size and the extent of social inequalities in quality of life and health behaviours in Limassol.

Design

This is a descriptive correlation study with cross-sectional comparisons using primary data.

Data collection, sample, sampling

In order to ensure a satisfactory response rate, postal communication (distribution of an open letter to all homes on the preselected roads) informed prospective participants that a university researcher would visit them for a short interview in the next few days. Information was also given on the importance and contribution of the study with the request to participate.

The afternoon hours were selected for data collection, as during these hours were more likely to be at home the target group. In case of refusal to participate, the frequency (number of people who said they did not want to participate) was counted, to have an overview of the response rate (losses).

The estimation of sample was based on power analysis. The minimum desirable sample in urban areas was set at 450 people. The sample size ensures a similar level of statistical power to detect such a degree social gradient in the quality of life in both genders separately, at least in urban areas (225 men and 225 women).

The data collection was done by door-to-door survey, in the form of interviews. 450 residents aged 45–64 (50:50 gender quota) across 45 randomly selected neighbourhoods (10 systematic random sample per area) from different city quarters, stratified by population density and proportion of adult residents with tertiary education.

Inclusion criteria

- People aged 45 to 65, to include the economically active population who has completed their studies, has a family, has income, and therefore has been integrated into their own professional, income and social status.
- People who can speak and read in Greek
- Permanent residents in Limassol (or permanent resident or residence in Limassol for 5 years)

Tools

Demographic / socio-economic characteristics and lifestyle characteristics

Variables related to personal characteristics, such as demographic characteristics (age, gender, marital status, area where they reside), socio-economic characteristics (level of education, annual income, occupation), as well as lifestyle characteristics (smoking, alcohol, physical activity).

Self-rated health

The level of self-assessment of the individual's health was measured on a 5-point scale (Likert scale), ranging from excellent health to poor. Individuals were asked to evaluate their health as: 1 = excellent, 2 = very good, 3 = good, 4 = moderate and 5 = poor.

SF 36 Questionnaire - Quality of Life

Quality of life questionnaire SF-36 was used to measure quality of life of research participants. The questionnaire was created in 1992 [20], and is used in several countries for the self-esteem of the Quality of Life and comparing the health status of different population groups.

The SF-36 scale is a tool used to measure the health level of a population. Its basic attribute is the simultaneous measurement and assessment of the level of physical and mental health. The grid of 36 questions includes eight measurement scales consisting of questions that represent the most measured health dimensions. These scales are: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH). The first four (4) dimensions make up the physical health, while other mental health of the individual. These eight scales are evaluated with a score ranging from 0-100 each, where 0 represents the minimum possible value and at the same time the worst health, while the maximum score of the scale, the value 100 is excellent health. Where a score of less than 50 this means that the person's health is below the average [21].

IPAQ- International Physical Activity Questionnaire short form

The International Physical Activity Questionnaire (IPAQ) is a popular and frequently used questionnaire, which was developed in the late '90s by a multinational working group, supported by the World Health Organization, to be used for comparative evaluation of physical population activity different groups and nationalities [22].

Social status and indicators of socio-economic disadvantage

The social status of the individual will be measured by the level of education, occupation, income.

Educational measurement refers to the highest level of education an individual attended (None / Primary, Secondary-Lower, Secondary-Upper, Undergraduate, Postgraduate studies).

Regarding the occupation, because the Cyprus Statistical Service classifies occupations only in the field of employment- which does not concern graduation, the Standard Occupational Classification of United Kingdom was used. Each participant was categorized according to his / her occupation.

The income indicator refers to the classification of individuals in relation to the monthly family income and was assessed according to the Cyprus Statistical Office standard through categories in which each participant was asked to choose one.

Statistical Analysis

Statistical analysis was performed using the statistical package IBM SPSS Statistics 23 and the significance level was set at $p < 0,05$.

For the summary of the data, descriptive statistics were used. The mean value (Mean) and standard deviation (SD) were used to describe quantitative variables. Descriptive statistics were used to analyse the demographic / socio-economic characteristics (age, gender, marital status, occupation, self-rated health).

Data concerning the International Physical Activity Questionnaire short form (I-PAQ) was entered in the IBM SPSS Statistics 23 Statistical Package according to the questionnaire's guide [23].

The import of SF-36 questionnaire data was done using the special software Quality Metric Health Outcomes Scoring Software 5.0, which was provided free of charge by OPTUM. The special software gives the values for all tool dimensions, both in non-standardized scores and in standard based scores. In this study, the standard values of the general population of the United States of America were used, considering gender, as there are no standard rates for the general population of Cyprus. Then the descriptive and inductive data analysis, the scores of the eight dimensions of the tool, as well as the two overall scores for physical and mental health, were introduced to the statistical package IBM SPSS Statistics 23. Scores over 50 are good quality of life, and under 50 not so good quality of life. The 5 difference points are significant, while 10 are considered a huge difference in quality of life.

ANOVA was used statistical analysis in order to see the difference in both the physical dimension and the mental dimension of the tool, for the social status indicators (education, income and occupation).

Linear regression was also used to calculate the correlation coefficient of movement at the different levels of the variables in relation to the quality of life (2 dimensions). The regression coefficient is expressed as a comparison of each prior category to each next, and so forth.

The regression analysis was repeated as above, including the gender and the gender interaction with the social status indicator (education, income, occupation), in order to investigate the differential correlation of each variable with the quality of life as gender.

Results

The survey response rate was 85.9%.

Demographics

The participants were 50% (N = 225) and 50% women (N = 225). The majority were 93.3% (N = 420) of Cypriot nationality, while the mean age of the sample was 53.7 ± 6.54 .

The results showed that 84% (N = 378) of the sample were either married or cohabiting, while 2.7% (N = 12) stated to be single.

Social status

The majority of the participants 80.8% (N = 364) has secondary upper and tertiary education Furthermore, 73.3% (N = 330) of the participants are employed either under full-time (68.4%) or part-time (4.9%). The family's monthly income seems to vary, 7.3% have a family monthly income of over € 5000, while, 26.4%, has between 1500 and 2000 euros.

Health behaviours

Participants were asked regarding smoking, alcohol and physical activity. More than half of the participants 57.8% (n = 260) reported to be non-smokers, while 35.8% (n = 161) consisting of smokers. it appears that the participants consume alcohol in their socialization, since almost half of them (41.6%, n = 187) reported consuming alcohol monthly. In relation to physical activity, 48% (n = 216) is classified as having mild physical activity, while only 15.8% (n = 71) is classified having intense physical activity.

When participants were asked to evaluate their health (self-rated health), 39.3% (n = 177) reported excellent or very good, 44% (n = 198) good and 16.7% (n = 75) moderate or poor.

Quality of life

Females seem to have lower scores in both dimensions of the SF-36. Especially in mental dimension, differences between the gender seems to be greater, because men have higher average values for all variables of mental dimension (Fig. 1).

Model of social status using individual characteristics and gender interaction

The mean values for quality of life in physical and mental dimension were 49.70 (S.D = 7.74) and 51.31 (S.D = 7.03) for men. The corresponding values for female gender are 50.02 (S.D = 8.52) and 48.86 (S.D = 7.91). Female gender seems to get lower in both dimensions of the SF-36. Especially in mental dimension, differences between the sexes seems to be stronger, because men have higher average values for all variables of the mental dimension.

The social gradient seems to be appeared in all social indicators (Table 2).

Table 2
Interaction of education, income and classification of occupation with quality of life - Physical dimension

PCS	Overall		Male		Female	
Education Level	N	M (SD)	N	M (SD)	N	M (SD)
None/Primary	26	41,95 (10,86)	15	44,35 (9,49)	11	38,68 (12,18)
Secondary-Lower	56	43,46 (9,37)	26	43,99 (9,09)	30	42,99 (9,74)
Secondary-Upper	191	49,78 (7,02)	104	49,68 (6,83)	87	49,89 (7,28)
Undergraduate	146	53,05 (6,11)	63	53,09 (6,21)	83	53,03 (6,07)
Postgraduate	27	54,89 (5,35)	13	52,63 (6,40)	14	56,99 (3,10)
P-value	< 0,001		< 0,001		< 0,001	
Per category increase (95% C.I.)	3,81 (3,08 – 4,53)		3,04 (2,03-4.05)		4,58 (3,55 – 5,62)	
P for trend	< 0.001		< 0.001		< 0.001	
P for interaction					0,16	
Income (€)	N	M (SD)	N	M (SD)	N	M (SD)
< 1000	63	42,61 (9,94)	21	42,11 (8,89)	42	42,86 (10,52)
10001 – 1500	117	48,55 (7,82)	59	47,39 (7,70)	58	49,73 (7,82)
1501–2000	119	51,16 (7,33)	64	50,78 (7,79)	55	51,61 (6,79)
2001–2500	77	53,19 (5,29)	40	53,13 (5,17)	37	53,25 (5,50)
3001–5000	40	52,25 (6,22)	20	51,83 (5,64)	20	52,68 (6,87)
> 5001	33	52,80 (6,61)	21	51,92 (5,80)	12	54,33 (7,86)
P-value	< 0,001		< 0,001			
Per category increase (95% C.I.)	2,00 (1,50 – 2,50)		1,84 (1,16 – 2,52)		2,23 (1,49 – 2,97)	
P for trend	< 0.001		< 0.001		< 0.001	
P for interaction					0,92	
Classification of occupation	N	M (SD)	N	M (SD)	N	M (SD)
Level 1	17	48,31 (7,70)	7	49,86 (3,96)	10	47,22 (9,58)
Level 2	123	51,03 (6,91)	44	49,97 (7,90)	79	51,63 (6,27)
Level 3	99	51,97 (5,90)	81	51,44 (5,78)	18	54,34 (5,99)
Level 4	71	53,84 (5,06)	35	53,91 (4,27)	36	53,77 (5,78)
P-value	0,002		0,04		0,01	
Per category increase (95% C.I.)	1,51 (0,72 – 2,31)		1,68 (0,50 – 2,86)		1,58 (0,46 – 2,71)	
P for trend	< 0,001		0,005		0,006	
P for interaction					0,31	

As for the physical dimension of health, it seems that a strong relationship exists between quality of life with the education index. Specifically, the difference between the two poles of the socio-economic scale (1st quartile and 4th quartile) is 12 for men and 14 for women. However, the result is not statistically significant. The value of the statistical control is 0.16 (Fig. 2).

As for the mental health dimension, the pattern of social gradient is evident, but the image is not so strong. In this dimension the difference between the poles is almost 5 points for men and 9 for women (Table 3).

Table 3
Interaction of education, income and classification of occupation with quality of life – Mental dimension

MCS	Overall		Male		Female	
Education Level	N	M (SD)	N	M (SD)	N	M (SD)
None/Primary	26	46,18 (11,04)	15	47,95 (10,77)	11	43,77 (11,45)
Secondary-Lower	56	49,30 (8,93)	26	49,73 (7,37)	30	48,91 (10,20)
Secondary-Upper	191	49,59 (7,35)	104	51,22 (6,71)	87	47,63 (7,64)
Undergraduate	146	51,25 (6,50)	63	52,70 (6,00)	83	50,15 (6,68)
Postgraduate	27	52,61 (5,89)	13	52,45 (7,51)	14	52,75 (4,17)
P-value		0,005		0,10		0,015
Per category increase (95% C.I.)		1,40 (0,66 – 2,14)		1,32 (0,34 – 2,30)		1,65 (0,56 – 2,74)
P for trend		< 0,001		0,008		0,003
P for interaction						0,56
Income (€)	N	M (SD)	N	M (SD)	N	M (SD)
< 1000	63	43,88 (10,80)	21	43,79 (10,36)	42	43,92 (11,14)
10001 – 1500	117	49,53 (7,13)	59	50,35 (7,36)	58	48,70 (6,85)
1501–2000	119	51,24 (6,16)	64	52,09 (5,84)	55	50,26 (6,44)
2001–2500	77	51,90 (6,32)	40	53,58 (4,95)	37	50,09 (7,15)
3001–5000	40	53,19 (4,40)	20	54,49 (3,71)	20	51,89 (4,74)
> 5001	33	51,91 (5,44)	21	51,83 (6,02)	12	52,04 (4,49)
P-value		< 0,001		< 0,001		< 0,001
Per category increase (95% C.I.)		1,56 (1,10 – 2,04)		1,40 (0,77 – 2,04)		1,57 (0,86 – 2,29)
P for trend		< 0,001		< 0,001		< 0,001
P for interaction						0,72
Classification of occupation	N	M (SD)	N	M (SD)	N	M (SD)
Level 1	17	51,31 (5,52)	7	52,98 (2,44)	10	50,15 (6,83)
Level 2	123	48,80 (8,00)	44	50,89 (7,67)	79	47,63 (7,99)
Level 3	99	52,70 (4,53)	81	53,02 (4,18)	18	51,23 (5,76)
Level 4	71	51,51 (5,70)	35	52,73 (5,48)	36	50,32 (5,73)
P-value		< 0,001		0,22		0,11
Per category increase (95% C.I.)		1,17 (0,34 – 2,01)		0,67 (-0,40, 1.75)		1,01 (-0.25, 2.27)
P for trend		0,006		0,22		0,11
P for interaction						0,90

The pattern of social gradient exists when income is concerned. The physical component of the model shows a strong relationship between quality of life and income, both in men and women ($p < 0.001$). For women, the difference between the two poles is almost 11.5 points, while for men almost 10. The per category increase is 2.23 points for women and 1.84 for men. No differentiation is observed between gender (p for interaction = 0.92) (Table 3).

Regarding the classification of occupation, this seems to vary, since the relationship of the occupational status, irrespective of the way of classification, occupation seems systematically to present stronger relationship in men than in women, both in physical and mental dimensions. Specifically, the difference between the poles in the physical dimension of the tool is 13 in men and 10 in women. In most areas, the difference in the classification of the profession and the quality of life between men and women is statistically significant (Table 3).

Model of social status using characteristics of the community/household (indicators of socio-economic disadvantage) and gender interaction

The socio-economic disadvantage indicators were grouped into two categories. The first category named Educational and socio-economic disadvantage includes the variables: Education, Non-Cypriot nationals, Non-Cypriot non-European citizens, Single parent households, Middle age, Households over 5,

Unemployment, Not owner occupied and elementary agriculture occupations. The second category Structural disadvantage includes the variables: Housing units pre 1980, Housing units post 2001, Vacant temp houses, Apartment blocks and Apartment mixed use.

Physical dimension

The variable of education seems to be clearly presented the social gradient. The increase per category, in the whole sample, is 1.23 points and is statistically significant ($p < 0.001$). The relationship between men and women differs. Specifically, in males the difference between the extremities (1st quadrant and 4th quadrant) is about 2 points, whereas in women this difference is around 6 points, and although it is not statistically significant ($P = 0.15$), it is clinically significant on the scale of SF36.

The other variables also present the social gradient, with no gender differences.

The variable apartment blocks presents the social gradient, but reverse. According to this variable, people who live in neighbourhoods with more apartment blocks (4th quarter) have better quality of life. The increase per category across the sample is 0.87 and the pattern does not differ between men and women.

Mental dimension

Regarding the mental dimension of the tool, the results is not statistically significant and does not seem to be any gender differentiation.

Social Class and health behaviors

Income

Smoking seems not to be related to the social status of a person (Table 4). Those with the highest smoking status > 50 pack years of smoking (15.2%) do not appear to differ significantly from those to the lowest social position (20.6%). The result is not statistically significant ($p = 0.36$).

Table 4
Social class (income, education, classification of occupation) and health behaviors

	Income						Education					Class
	< 1000	1001–1500	1501–2000	2001–2500	3000–5000	> 5000	None Primary	Secondary-Lower	Secondary-Upper	Undergraduate	Postgraduate	Level 1
Smoking							42.3%	51.8%	55%	68.5%	74.1%	
< 1 pack years of smoking	55.6%	52.1%	64.7%	62.3%	67.5%	54.5%	0%	14.3%	10.5%	13%	7.4%	35.3'
1–25 pack years of smoking	9.5%	12%	7.6%	10.4%	17.5%	15.2%	26.9%	16.1%	19.9%	11.6%	11.1%	17.6'
> 25 > 50 pack years of smoking	14.3%	20.5%	16%	14.3%	15%	15.2%	30.8%	17.9%	14.7%	6.8%	7.4%	35.3'
> 50 pack years of smoking	20.6%	15.4%	11.8%	13%	0%	15.2%	0.006					11.8'
p- value	0.36											0.02
Alcohol consumption							7.7%	3.6%	2.6%	4.1%	0%	
Often or daily	1.6%	3.4%	4.2%	1.3%	5%	6.1%	3.8%	14.3%	10.5%	8.2%	7.4%	0%
1–2 times a week	7.9%	10.3%	12.6%	9.1%	5%	6.1%	23.1%	12.5%	20.9%	30.1%	18.5%	11.8'
2–3 times a month	15.9%	21.4%	26.1%	31.2%	20%	21.2%	30.8%	19.6%	46.1%	44.5%	55.6%	35.3'
Almost once a month	31.7%	33.3%	46.2%	44.2%	50%	54.5%	34.6%	50%	19.9%	13%	18.5%	29.4'
Hardly any or no	42.9%	31.6%	10.9%	14.3%	20%	12.1%	< 0.001					23.5'
p- value	0.002											0.85
Physical activity							69.2%	61.8%	47.4%	39%	40.7%	
Low intensity	69.4%	48.3%	42%	44.2%	35%	51.5%	23.1%	23.6%	31.6%	48.6%	48.1%	47.1'
Moderate intensity	22.6%	34.5%	39.5%	39%	47.5%	36.4%	7.7%	14.5%	21.1%	12.3%	11.1%	29.4'
Vigorous intensity	8.1%	17.2%	18.5%	16.9%	17.5%	12.1%	0.001					23.5'
p- value	0.07											0.43

Regarding the frequency of alcohol consumption, it seems that people with higher income (higher social status) consume alcohol often or even daily (6.1%), compared to people with lower social status who consume alcohol at the same frequency (1.6%) ($p = 0.002$).

Physical activity did not appear to be related to income ($p = 0.07$).

Education

Education was statistically significant across all health behaviors under study. Compared to those with postgraduate education level who smoke > 50 pack years of smoking (7.4%), those with none/primary education (30.8%) are significantly much more ($p = 0.006$) (Table 4).

The same picture is seen in the frequency of alcohol consumption, where people with none/primary education (7.7%) are much more, than people with postgraduate education (0%) ($p < 0.001$).

Physical activity was statistically significantly correlated with education level ($p = 0.001$). People with secondary-upper education level appear to have more physical activity (21.1%), than those with none/primary education (7.7%).

Classification of occupation

The occupation classification statistically significantly associated only with smoking ($p = 0.02$) (Table 4).

Discussion

The purpose of this study was to investigate the size and extent of social inequalities in the quality of life and health behaviors of residents in Limassol. Additional research questions included exploring the relationship of a person's social status with various health parameters such as quality of life and other health behaviors. The survey results appear to support the initial assumptions.

Compared to other studies [11, 24–27], that determine the social status of the individual with individual characteristics, our study investigated the quality of life, both in terms of individual characteristics and characteristics of the community/household (indicators of socio-economic disadvantage).

Social status using individual's characteristics and quality of life

As in other studies, this study appears to have a strong correlation between demographic characteristics and quality of life [15, 27–32]. In particular, a strong correlation appears to be associated with variables age (younger), level of education (older), income (older) and employment status (full-time). The phenomenon of the healthy worker would explain to some extent the correlation observed in the quality of life. The healthy worker effect refers to the consistent tendency of active workers have a more favorable mortality experience than what the general population [33]. According to this phenomenon, workers usually have lower overall death rates than the general population, because seriously ill and chronic disabilities are usually excluded [34], from employment. Good working conditions can provide social protection, personal development opportunities and protection from physical and psychosocial hazards. They can also improve social relationships and self-esteem of workers and lead to positive health effects [35].

The results of the study show that women have lower values in all quality of life indicators. These results are consistent with other studies in the literature showing that men receive higher average quality of life than women [15, 28, 36, 37]. Women are likely to experience multiple roles, many at the same time. The expectations others have of women in any of the multiple roles, may differ from the expectations of themselves and come into conflict with their goals as individuals [38].

Social status using characteristics of the community/household (indicators of socio-economic disadvantage) and quality of life

The exploration of social status using community characteristics was done using indicators of socio-economic disadvantage. Indicators with the most statistical significance that reflect social gradient is the education level ($p < 0.001$), unemployment ($p = 0.001$) and the absence of a computer ($p = 0.001$). Specifically, people who live in neighborhoods where the education level is higher, unemployment is lower and most homes have a computer, have higher levels of quality of life. The above findings are consistent with studies investigating the quality of life in relation to the socio-economic level [30].

The level of health of people living in neighborhoods with the highest socio-economic status was lower than those living in areas of lower socio-economic status [29].

Interaction of social status and gender

The exploration of social status (individual indicators) in relation to quality of life was conducted using the variables of education level, income and classification of occupation. In contrast to other studies [11, 24–26], which do not show the social inclination and how this inclination differs between men and women, the phenomenon of social gradient is clear to the whole population, both for the physical dimension of the tool and for the mental.

In an attempt to explore whether the pattern is changing by studying both genders separately, it has been found that the pattern of social graduation remains, with women having a stronger relationship with the variable level of education and income, whereas this relationship appears to be reversed in the variable occupation, where men present the strongest relationship. However, in all dimensions of the tool this relationship is not statistically significant. This is probably due to the fact that the sample is not large enough in each group.

Social status and health behaviors

To some extent, quality of life seems to be related to health behaviors, but health behaviors cannot fully explain this association. Health behaviors are not related to the observed graduation in the quality of life of individuals.

Comparison with other countries

An attempt was made to compare the results of the population of the city of Limassol with populations of other European cities as well as with Canadian cities. Excluding Canada cities all other cities seem to have similar population.

Compared to other selected studies in the literature, overall quality of life indicators appear to be lower in Limassol. This is the case for both the physical dimension indicators and the mental dimension indicators. Athens is the only exception. Looking at the populations of Limassol and Athens individually, they appear to have a very similar picture in the 8 indicators of the tool (Fig. 3).

Limitations

This study has been conducted only in the city of Limassol. However, it is the first study to give population norms for Cyprus.

Unlike other countries in Cyprus, there is no ranking of the professions. For these purpose authors adopted the Standard Occupational Classification of United Kingdom.

Conclusions

Exploring social inequalities in quality of life, is a complex state influencing social physical and psychological state of health. According to Wanderley [39], there is not a single study or a single tool capable of simultaneously clarifying the mechanisms identified as related to health and functionality (eg living conditions, financial status, marital status, lifestyle).

It seems that being male, young, highly educated, with high income, working full time and having a mild physical activity, there is significant higher level of quality life in relation to others.

With respect to the characteristics of the community/household associated with social status has shown that low levels of education, unemployment and the absence of a computer at home are significantly associated with low levels of quality of life. However, it does not appear to be any differentiation between men and women. Regarding linear regression with respect to individual's characteristics, showed that strong predictors associated with low quality of life are all three individual characteristics of social status- education level, income, and occupation. This relationship seems to be stronger in women.

Many studies show that gender affects the patterns of risk factors and that this has a different impact on quality of life. Therefore, gender specificities must be taken into account in health prevention strategies [11, 27].

Abbreviations

HRQoL

Health-related quality of life

Declarations

Ethics approval and consent to participate

Ethics approval for this study was received from the Cyprus National Bioethics Committee. Informed consent was taken from each participant and confidentiality was maintained by excluding the name of participants from the questionnaire and keeping the privacy during the interview time.

Consent for publication

Not Applicable.

Availability of data and materials

Authors' contributions

Competing interests

The authors declare that they have no competing interests. All authors read and approved the final manuscript.

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Figures

Figure 1

SF 36 dimensions in relation to gender

Figure 2

Quality of life in relation with education index-physical dimension

Figure 3

Comparison of quality of life between countries