

Research Article

Investigation of Socioeconomic Inequalities in Health-Related Quality of Life across Europe: A Systematic Review

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ABSTRACT

Background: Health-related quality of life (HRQoL) is a multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning. Recent research on health inequalities shows that social inequalities in health are a scientific, academic, research, political and social issue. Poverty reduction, effective health care for citizens and improved quality of life are long-term objectives for ensuring social and economic cohesion. The aim of the paper is to present the review of the literature of population and community studies that have used the SF36 tool to investigate the quality of life in the general population.

Methods: Systematic review of articles in SCOPUS database collates the findings of the studies which have investigated the quality of life in the general population. The main inclusion criteria were: The use of SF-36, study being in Europe in-between 2011-2017.

Results: Eighteen studies (n=18) met the inclusion criteria. The search revealed studies from different European countries. Most of the studies used cross-sectional design. The sample size and sampling varied between the studies. Factors that appear to be associated with low quality of life related to health included, female gender, older age, low education, lower occupational classes, reduced income and some health behaviors such as smoking, alcohol consumption, lack of physical activity and obesity.

Conclusion: Inequalities affect everyone. Conditions that lead to marked health disparities are detrimental to all members of society. Public and community health nursing advocate for a healthy society established on a foundation of social justice.

Keywords: Health behaviors; Health inequalities; Quality of life; SF 36; Social inequalities

What is Known About this Topic?

- The "Black Report" is the first report which shows that social inequalities are important for identifying health
- The level of inequalities among different social groups and between people living in different parts of the world remains high.
- Health-related quality of life is a multi-dimensional concept that includes domains related to physical, mental, emotional, and social functioning.
- The causes, as well as the importance of different influencing factors are not clear.

What the Paper Adds?

- Various factors that appear to be associated with low quality of life related to health are: female gender, older age, low education, lower occupational classes, reduced income and some health behaviors such as smoking, alcohol consumption, lack of physical activity and obesity.
- Although the health of the population in most countries in the world is improving, the rate of improvement is not the same for all social groups.
- Women seem to have lower scores in quality of life.

- Social gradient was associated with poorer self-rated health and poorer quality of life in both men and women. Regardless of their health status, people with lower social status are more likely to report poor health status (self-rated) and poorer quality of life.

Introduction

Quality of life appeared in the literature in early 1960's [1]. Health-related quality of life (HRQoL) can be defined as an individual's ability to carry out some activities refers to functioning, while an individual's subjective feelings refers to prosperity [1,2]. Thus, health-related quality of life represents a broad concept of physical, psychological factors with social functioning and well-being [2].

According to World Health Organization [3] health inequalities show that social inequalities in health are a scientific, academic, research, political and social issue. While significant progress has been made in the health sector, the level of inequalities among different social groups and between people living in different parts of the world remains high [4,5].

Social inequalities in health have been at the heart of discussions and reflections at European Union, international organizations and the scientific community in recent years. The "Black Report" is the first report which shows that social inequalities are important for identifying health and

was published in 1980, from the British Ministry of Labour. According to that report, the 1971 mortality rate for the ages of 15-64 was twice as high for lower social classes as for those in the upper social class. The conditions under which people live and work are important for identifying health and illness, with reference to the impact of the socio-occupational category on the determination of the level of health and the existence of inequalities in morbidity and mortality rates among the categories [6,7].

Comparative and national studies suggest that the existence of inequalities in health is not only universal, (among the European and non-European populations), but it has also remained stable or even increased with time [8-11].

Defining social inequalities in health

Social inequalities in health is the general term that is used to define differences in the health of individuals and groups, both in relation to individual features and feature-subgroups of a group level population [12].

Social inequalities in health refer to the systematic differences in health between different socio-economic groups. Three characteristics, when presented in combination, are the notional difference between what is considered as a simple variation in health and social inequality in health [13]. The first characteristic refers to the systematic pattern of differences in health. These differences are not distributed randomly; instead, they seem to have a stable pattern. An example is the systematic differences in health between the different socio-economic strata of the population. The second characteristic refers to the differences in health that have roots in social processes, and they are not biologically defined. The third characteristic of social inequalities in health is that they are widely viewed as unfair because they are created and maintained by what Evans & Peters [14], have called "Unjust Social Arrangements," and which they inflict fundamental concepts of justice [3].

Importance of social inequalities in health for community and public health nursing

The extent of health inequalities varies between countries, within countries and between people. This suggests that these inequalities are influenced by the social policy of the state and the individual's characteristics - and therefore are likely to be modifiable. In Scotland, for example, a child born in the most disadvantaged neighborhood of Glasgow is expected to live up to 10 years less than a child growing up in the most affluent neighborhood [3].

Although the health of the population in most countries in the world is improving, the rate of improvement is not the same for all social groups. This social pattern of disease is global, although its degree and extent vary from country to country [4]. Reversing these trends is one of the greatest challenges in recent time. WHO has set as immediate priority on achieving justice and equity in health [15-17].

The existence of social inequalities in health is a challenge to public health and, at the same time, public health is a core of work for all nurses. Nurses are daily confronted with the consequences of social inequalities in health and wellbeing

of communities. The community development approach takes a broad-based positive view of health, instead of focusing on illness and includes evaluation of the social aspects that determine the health and well-being (e.g. housing, poverty, education level). Empowering individuals and communities to take control of their lives will help significantly in improving their health [18].

Social inequalities in health, seriously threaten social cohesion and, therefore, their investigation is essential for public and community health. Poverty reduction, effective health care for citizens and improved quality of life are long-term objectives for ensuring social and economic cohesion [19-21].

Aim of the paper

Despite the extensive literature on inequalities in health, the causes, as well as the importance of different influencing factors (e.g. smoking, alcohol, obesity, physical activity), are not clear [4]. Some of the factors [4,22], also include: the natural environment (high levels of pollution, noise, geographical distribution), the working environment (e.g. work stress), the health system (quality of health services, access to health services) and the social environment (social support environment, access to social resources). Why this is here move it up- here only aim the aim of the paper is to present the review of the literature of population and community studies, that have used the SF36 tool to investigate the quality of life in the general population.

Materials and Methods

This is a systematic review contacted in SCOPUS database. Articles were also searched, using the web search engines. The inclusion criteria were:

- Year of the study 2011-2017.
- Study area: European country, whether the study has a national scope or concerns a specific area, city, etc
- Studies that used the SF36 quality of life-related health assessment tool, regardless of whether other assessment tools and related concepts were used in parallel.
- Studies used the 8 subscales of SF36 only or the two component scores (physical and mental component scores).
- Studies in English or Greek language.
- Studies whose main research question was to investigate the quality of life in a general "healthy" population regardless of whether the sampling was conducted in the community or in a clinical environment, and regardless of whether they limited the investigation to an age group or gender. Studies were included which concerned a specific sample of the population but had "general population".
- Aim of the studies: (a) to estimate population norms for the population under study) and / or (b) to investigate social status in QoL and presenting data in QoL in relation to social status indicators (either individuals such as education, income, occupational class, eco- indicators

of socio-economic disadvantage of the residence area, or other indicators of material deprivation and social exclusion) and / or (c) studies to investigate gender differences and / or (d) to investigate the correlation of health behaviors and lifestyle factors (e.g. smoking, physical activity) and relevant factors (e.g. obesity) with quality of life.

- Research studies with primary data regardless methodological design (descriptive correlation studies or comparison whether sectional or longitudinal and / or studies on experimental design if they provided data for QoL at the reference point).

Search methods

A systematic review of the literature was performed at SCOPUS database from January 2017 to August 2017. An advanced search was built in one level of searching, using as key words: SF – 36 OR SF 36 OR SF36 OR Short Form 36. Only research studies were selected, either Article or Article in Press.

Results

The searching led to the selection of 5815 articles. Of these, 5758 were discarded after reading the title, 25 after reading the abstract and 14 after the full text reading. A total of 18 research studies were identified, which complied with the eligibility criteria (Figure 1).

Description of the studies

Year, place, type of data and conducted level of the included studies

All studies that met the criteria conducted between 2012 and 2017.

The search has led to a variety of studies as far as the country is concerned. Specifically, the choice of 18 studies includes countries such as Norway [23], Portugal [24], Finland [25-27], Spain [28,29], Great Britain [30,31], France [32-34], Poland [35,36], Greece [37], Russia [35], Lithuania [35], Holland [38], Ireland [38] and Czech Republic (Table 1) [35].

The purpose of the studies was to investigate the quality of life in relation to different health situations or even in relation to various health behaviors, using the SF36 as the main tool.

Methodology of studies

Most of studies, were cross-sectional [23,25,27,31,33,35-37,39]. In cross-sectional studies, although there is a time dimension, data is collected at a given point time, so there is the opportunity to explore both population groups that differ in evolution or experience stage [40]. In addition, two studies had as a design the descriptive correlation study [34,41], one the descriptive study [28], one was Trend survey [32], one was panel study [26], one was prospective study [24], and four were cohort studies [29-31,38].

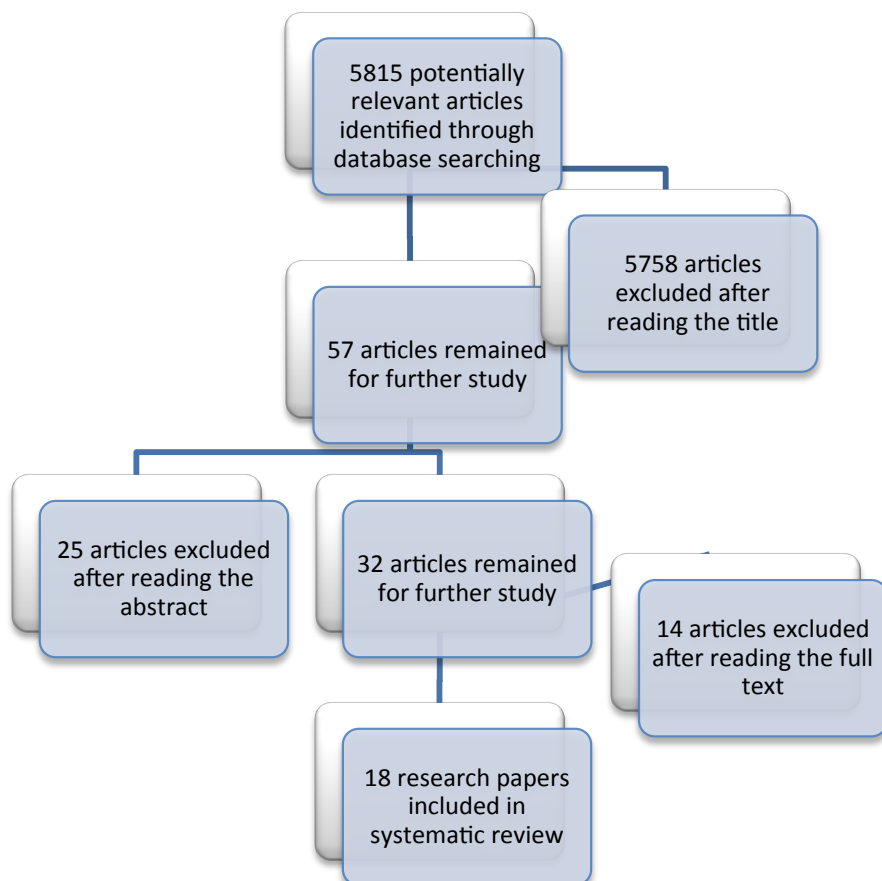


Figure 1: Flow diagram of the results of the search strategy.

Table 1: Multistage probability sampling studies.

No	Authors Country	Study design Sample	Tool	Aim	Main findings
	Garratt & Staven 2017 Norway	Cross-sectional study 5396 Male: 2623 Female: 2773 Age: 16 years and over General population	Postal survey (telephone interviews prior to postal survey) Self-administrated questionnaires SF-36	To present data for the general population from 2002-2003 which has been used for comparative purposes	Socio-demographic characteristics (gender, age, education, marital status) Gender Females had lower scores than male across the eight health scores. Age The two youngest age group (<30 years) had the highest scores for physical aspects of health. The age groups 40-49 and 60-69 years had the highest scores for role-emotional and mental health respectively.
	Pietiläinen et al. 2012 Finland (Helsinki)	Panel study 7207 Male: 1329 Female: 5878 Age: 40-60 years Data from Helsinki Study cohort	Postal survey Self-administrated questionnaires SF-36	To examine changes of occupational class differences in physical functioning and the factors that explain these changes	Occupational classes and gender: differences in physical functioning between occupational classes were clear both baseline and follow-up: lower classes had worse physical functioning among both women and men.
	Prata et al. 2016 Portugal	Prospective study 261 Male: 103 Female: 158 Age (mean): 44 years Primary health care users	Participants were interviewed and assessed for various demographic, behavioural, clinical and psychosocial measures. SF-36	• To investigate how gender differences in cardiovascular risk factors impact quality of life perception	Socio-demographic characteristics (age, education, occupation status, health behaviours BMI) Age, educational level, living status or occupation • No differences were found regarding age, educational level, living status or occupation Health behaviours • Women presented significantly lower alcohol consumption (p<0.001), lower BMI (p<0.001), and less exercise activity (p<0.005) than men. Psychosocial measures • Women had more prevalent psychiatric history, depressive and anxiety symptoms and negative affectivity. Quality of life • Women reported significantly worse quality of life on most SF-36 subscales
	Väätäinen et al. 2016 Finland Savitaipale	Cross-sectional study 707 people without a diagnosis of diabetes Male: 312 Female: 395 Age: 51-75 years Data from Savitaipale study	Via interview Laboratory assays Diagnostic tests Instruments FINDRISC HRQoL instruments (15D and SF-6D) SF-36	To examine the relationship between the estimated risk of developing type 2 diabetes and health- related quality of life (HRQoL)	Demographic characteristics Old age, lack of physical activity, obesity and history of high blood glucose were the factors most prominently associated with lower HRQoL.
	González-Rubio et al. 2016 Spain	Observational study 231 Age: 55-85 ετών Answered to advertisements placed in sociocultural centres' notice boards or were attracted into participation by word of mouth	Via interview Instruments SF-36 SUN Study Questionnaire AFINOS Study Questionnaire The Minnesota Leisure-Time Physical Activity Questionnaire 14-item Mediterranean diet-adherence score National Health Survey questionnaire	To study the relationships of moderate alcohol intake and the type of beverages consumed with health behaviours and quality of life in elderly people	No significant differences were found among alcohol consumption groups in age, gender proportions, chronic disease prevalence, overweight prevalence, education level or employment status. Smoking was significantly more prevalent in moderate drinkers group than abstainers group. Moderate drinkers group reported higher socioeconomic status compared with abstainers group (p=0.02)

Bell & Britton 2014 Great Britain	Prospective cohort study (Whitehall II) 6330 Male: 4594 Female: 1736 Age: 34-56 years Whitehall II Study	Via interview SF-36	To investigate the relationship between alcohol consumption and mental health over multiple occasions, and to compare a series of competing theoretical models so to determine which best reflected the association between the two	Demographics Mental health influences changes in alcohol consumption but not vice versa. Those with better mental health tended to make greater reductions in their drinking between occasions. Τα επίπεδα ψυχικής
Coste et al. 2014 France Paris	Cross-sectional study 16011 Male: 7525 Female: 8486 Age: 25-64 years Clustered, stratified (region size and urban unit) and random sampling design	Via interview SF-36 Smoking questionnaire	To quantify the independent associations between smoking patterns and health related quality of life (HRQoL) and to identify any threshold or non-linear tendencies in these associations	Demographics and socioeconomic characteristics Daily smokers had lower scores than other groups. Male never smokers had consistently higher HRQoL scores than smokers. Female never smoker had lower HRQoL than occasional smokers
Korhonen et al. 2014 Finland Harjavalta	Cross-sectional study 1187 (Harjavalta project) Male: 509 Female: 678 Age: 45-70 years At clinic	Self-administrated questionnaires Physical examination SF-36 EQ-5D Beck's depression inventory (BDI) Alcohol Use Disorders Identification test (AUDIT)	To assess HRQoL, BMI and health behaviour patterns in a community sample of subjects who had no long-lasting medical comorbidities	Physical component summary scale All physical components of the SF-36 decreased linearly to BMI categories in women Mental component summary scale Scores on the mental components of the SF-36 did not differ by BMI categories in either gender.
Żołnierczuk-Kieliszek et al. 2014 Poland Lublin	Cross-sectional study 2143 Women Age 45-65 years	Postal survey Self-administrated questionnaires WHOQOL-BREF Women's Health Questionnaire Sociodemographic data questionnaire SF-36	To evaluate the impact of sociodemographic factors on the quality of life in 45-65year old women	A significantly better quality of life was established in women aged 45-49 years, respondents living permanently in urban areas, as well as better educated women, those with full time employment, especially those doing intellectual work, women remaining in a long-lasting relationship and women assessing their financial situation and living condition as well
Theodoropoulou et al. 2013 Greece Athens	Cross-sectional study 327 Male: 105 Female: 222 Age: 30-50 years Convenience sampling	Via interview (SF-36) and Self-administrated questionnaires Anthropometric measurements Socio-demographic questionnaire Health problems questionnaire Baecke PA questionnaire SF-36	To explore obesity-related predictors of HRQoL in a sample of Greek healthy adults	Socio-demographic characteristics BMI negatively predicted the physical functioning physical role, bodily pain and social functioning subscales, as well as the physical health factor Obesity indexes did not predict other psychological health subscales
Audureau, E., Rican, S., Coste, J. 2013 France	Trend survey 3243 (1995) Age: 18-84 years and above Male: 1492 Female: 1751 22743 (2003) Age: below 85 years Male: 10689 Female: 12054 Random sampling from census of population	1995: Postal survey 2003: Via interview and Self-administrated questionnaires Self-reported health-related quality of life questionnaire (demographic, socioeconomic and health status) SF-36	To investigate time trends in health-related quality of life in France and to report existing and changing demographic, socioeconomic, and geographic disparities	Socio-demographic characteristics Increasing age, female gender, divorce/widowhood, lowest educational levels, chronic conditions, and living in Northern region were identified as independent predictors of lower HRQoL scores

Dorynska et al. 2012 Russia (Novosibirsk), Poland (Krakow), Lithuania (Kaunas) and six Czech towns	Cross-sectional study 34431 Age:45-69 years Random sampling Towns Krakow and Czech during a nurse visit in their home Towns Novosibirsk and Kaunas during a visit to a clinic	Self-administrated questionnaires Sociodemographic questionnaire SF-36	To investigate functional limitations and their association with socioeconomic factors in four Central and Eastern European populations	Sociodemographic characteristics Functional limitations were more common in male smokers and less common in alcohol drinkers Functional limitations were strongly inversely associated with education, and positively with material deprivation and with being economically inactive
Bosma et al. 2012 Netherlands (Maastricht)	Prospective cohort study 1282 Male: 649 Female: 633 Age: 55 years and above The Dutch SMILE study	Postal survey Self-administrated questionnaires SF-36	To examine the contribution of perceived unfairness to the higher risks of physical and mental dysfunction in men and women with a lower socioeconomic position	Social status: persons with a high socioeconomic position reported less perceived unfairness than persons with a low socioeconomic position Gender and age: persons with a high socioeconomic position more often were men, younger and had better scores on physical functioning at the start
Lente et al. 2012 Ireland	Cross-sectional study 10364 age: 18 years and above Multistage probability sample	Via interview SF-36 RAND (EVI- energy and vitality index)	To examine the relationships between indicators of positive and negative dimensions of mental health, social well-being and physical health	Sociodemographic characteristics Gender: men were more likely to have high scores on the EVI than women. Age: Age group (age 18-29) were more likely to have high scores than older adults. Positive mental health is predicted by lower levels of loneliness and higher levels of social support. The associations with gender, marital status, economic status and social class were not significant with other characteristics controlled.
Delpierre et al. 2012 France	Descriptive-correlational 21785 Age: 18 years and above Multilevel, stratified, random sampling Household from population census	Via interview and Self-administrated questionnaires SF-36	To assess the influence of socioeconomic position (SEP) on the relationship between physical health status and subjective health status, measured by self- rated health (SRH) and HRQoL using the SF-36 scale	The social gradient was associated with poorer SRH and poorer quality of life both in men and women. People with lower SEP were more likely than their more socially advantaged counterparts to report poor SRH and poorer HRQoL, using any of the indicators of SEP
Otero-Rodríguez et al. 2012 Spain	Prospective cohort study 2117 Age: 60 years and above Convenience sampling Population based- household	Via interview and Physical examination SF-36	To evaluate the influence of socioeconomic position over the life course on change in health-related quality of life in older adults	Sociodemographic characteristics After adjustment for baseline HRQoL, lifestyle, chronic illness, educational level and adult social class, low childhood social class was associated with higher risk of both decline and an improvement in the SF-36 PCS and MCS.
Mavaddat et al. 2011 Great Britain Norfolk	Cohort study 20853 Age: 39-79 years Male: 9085 Female: 11768 Convenience sampling	Self-administrated questionnaires and physical examination SF-36	To determine the extent to which dimension of physical, mental and social functioning are associated with self- rated health	Sociodemographic characteristics In multivariate models adjusting for age, gender, social class, medical conditions and depression, all subscales were independently associated with SRH
Wanderley et al. 2011 Portugal Porto area	Descriptive-correlational 85 Male: 21 Female: 64 Age: 60-83 years Convenience sampling	Via interview SF-36	To examine the associations between HRQoL and each of objectively assessed habitual physical activity and physical fitness	Demographic characteristics Gender: Men had reported better HRQoL than women on four domains physical functioning (p=0.02), general health (p=0.03), vitality (p=0.03) and mental health (p<0.001) simple correlation coefficients between each HRQoL domains and each of the PA and physical fitness variables indicated that PA and physical fitness levels were significantly positive correlated with several domains of HRQoL

In seven studies out of 18 (7/18), the data were obtained through an interview [24,27,28,30,33,39,41]. Some researchers chose postal questionnaire technique and the subjects completed self-administrated questionnaires [28,35,36,38], some others chose combination of an interview and self-administrated questionnaire [23,32,34] or an interview and physical examination [24,25,29] or self-administrated questionnaire and physical examination [31], or even self-administrated questionnaire, interview and physical examination [37].

The size of the sample varied among the studies. Specifically, in the studies of Wanderley et al. [41] and González-Rubio et al. [28], the sample was 85 and 231 respectively. In contrast, the studies of Dorynska et al. [35] and Delpierre et al. [34], had a very big sample, 34431 and 21785 respectively. Five out of eighteen studies had a sample less than 1,000 people, while eight out of eighteen studies had a sample of over 5,000 people.

The sampling design was different between the studies. Some studies used stratified and random sampling design [33,34], some used convenience sampling [23,24,28,29,31,36,37,41], some other used random sampling [32,35], while some studies used the sample from previous studies [25-27,30,38] and one study used the multistage probability sampling (Table 1) [39].

Quality of life and correlation with other variables

Factors that appear to be associated with low quality of life related to health are: female gender, older age, low education, lower occupational classes, reduced income and some health behaviors such as smoking, alcohol consumption, lack of physical activity and obesity (Table 2: Correlations of quality of life with other variables).

Gender

As shown in Table 2, 13 out of 18 studies investigate differences in quality of life and gender. The studies that investigated the correlation of quality of life with gender, show that women seem to have lower scores in quality of life [24,25,31-33,41]. Specifically, the study of Garratt et al. [23], shows women to have lower scores than men, in all dimensions of the SF36 quality assessment tool. The study of Wanderley et al. [41], presents men to have higher scores in 4 dimensions: *physical functioning* ($p=0.02$), *general health* ($p=0.03$), *vitality* ($p=0.03$) and *mental health* ($p<0.01$). However, in women, the factors that appear to be protective factors are low BMI, low risk of diabetes and low risk of other chronic diseases [24].

Age

Age was studied in 7 out of 18 studies [23,24,31,32,36,38,39]. Żolnierczuk-Kieliszek et al. [36], conducted a study that shows younger women to have a significantly better quality of life than older women ($p < 0.05$). Garratt et al. [23], found that the two youngest age groups (<30 years) have better scores in the physical component summary scale, while the age groups 40-49 years and 60-69 years showed the highest scores in mental component summary scale - emotional role and mental health.

Educational level

A significant predictor of higher quality of life scores is the level of education [35-37]. In particular, higher quality of

life scores were shown between women having a bachelor and master degree, while the lowest scores were showed between women with no primary education, women who completed only primary education and women who graduated from high school [36].

Occupational status and income

According to Pietiläinen et al. [26], lower occupational classes showed lower score in physical component summary scale, both between men and women.

Women in full-time employment enjoyed a significantly better quality of life than the other participants. The type of occupation is also important, as manual workers seem to have lower quality of life scores than those working as teachers or in a profession with high levels of responsibility. Better income corresponds to a better quality of life [36].

Social gradient

Delpierre et al. [34], showed that social gradient was associated with poorer self-rated health and poorer quality of life in both men and women. Regardless of their health status, people with lower social status are more likely to report poor health status (self-rated) and poorer quality of life.

Health behaviors

In relation to alcohol consumption, men seem to consume higher amounts of alcohol (15.8 gr) per day than women (10.8 gr) per day [28]. Women showed statistically significant reduced alcohol consumption, lower BMI and less physical activity than men ($p < 0.001$).

In relation to smoking, male smokers showed lower scores in physical fitness and general health, while younger male smokers showed higher scores in health-related quality of life [33].

A significantly lower quality of life was showed in single women (unmarried women, women in separation, divorced or widowed). Significant difference in quality of life is shown in women living alone, singled, divorced, widows or even in a dimension. Lower quality of life was also indicated in women participants living in rural areas [36].

Lente et al. [40], showed clear correlations between increased levels of self-rated of health, active physical activity, reduced visits to general practitioner (GP), and good mental health ($p < 0.001$).

Discussion

This study reviewed 18 research papers, which have used the SF36 tool to investigate the quality of life in the general population. Most of the studies were observational studies, that involves a cross-sectional design and all the measurements for a sample member are obtained at a single point in time.

The common feature of most studies seems to be that they are investigating many factors such as income, presence of chronic diseases, health behaviors (smoking, alcohol consumption, and physical activity), obesity and more. Although they present data on both genders, no study shows the social gradient and how it differs in gender.

Table 2: Correlations of quality of life with other variables.

	GENDER	AGE	EDUCATION	OCCUPATION	INCOME/ ECONOMIC STATUS	OTHER	Determinant	Outcome	Alternative way
1.	√	√							
2.									
3.	√						• Health behaviours	• Cardiovascular risk factors	Social inhibition
4.	√	√					• Individual risk factors (BMI, Physical activity, History of high blood glucose)	• Diabetes risk score	
5.							• Alcohol consumption		
6.							• Alcohol consumption		
7.	√	√					• Smoking		
8.	√						• BMI		
9.	Only women	√	√	√	√		• Area of living (rural or urban)		
10.							• Professional status		
11.	√	√	√	√			• Marital status		
12.	√		√		√		• Area of living (size of urban unit)		
13.	√	√					• Chronic diseases		
14.	√	√	√		√		• Professional status		• Perceived unfairness
15.							• Material deprivation		• Loneliness
16.		60 years and over					• Socioeconomic status (income and education)		• Social support (strong, poor, moderate)
17.	√	√ (less than 65 and 65 and over)					• Self-rated quality of life		
							• Self-rated quality of life		
							• Area of living (rural or urban)		
							• Marital status		
							• Social class (profession/manager, intermediate, self-employed, lower technical)		
							• Smoking and alcohol consumption		
							• GP consultation		
							• Self-rated health		
							• Chronic back pain		
							• Potential confounders (smoking, alcohol consumption, physical activity, central obesity, chronic disease – associated with the change in the SF36 PCS or MCS)		• Socioeconomic position over the life (father's occupation, educational levels, occupation of the household head)

The studies seem to consider the area of living as a variable to correlate with quality of life. None of these studies are using the area evaluation as a composite indicator and how the quality of life of the individual is affected by the characteristics of the area in which he or she lives. They use the variable area of living just to present data from the urban or rural area.

Almost no study determines the individual's social status in multiple ways. All studies use one's own individual characteristics such as income, education, and occupation. The only study referring to socioeconomic position over the life is that of Otero-Rodriguez et al. [29], who consider socioeconomic position as an index of three variables, father's occupation, educational level and occupation of the household head.

A special reference should be made to two studies. The first one is the study of Bosma et al. [38] that refer to the concept of 'perceived unfairness'. Perceived unfairness was most often reported by persons with lower socioeconomic position, women and elderly. Both perceived unfairness and socioeconomic position were related to lower score of quality of life. The second study is the study of Otero-Rodríguez et al. [29], who studied the concept of social status both in childhood and in adulthood. The lowest socio-economic position in childhood is associated with a higher risk, both for physical and mental health. In contrast, social status in adulthood does not seem to be related to changes in quality of life levels.

Systematic review seems to present the phenomenon of multiple-role woman. As women continue to balance with working outside the home, as well as with their responsibilities within the home, the idea of simultaneously participating in multiple roles has become a social 'rule' [42]. In addition, maintaining the multiple roles can lead to a stressful conflict between the roles resulting in a person's dissatisfaction with the ability to perform those roles. This may have negative psychological and physical effects [43].

Inequalities affect everyone. Conditions that lead to marked health disparities are detrimental to all members of society. Some types of health inequalities have obvious spillover effects on the rest of society, for example, the spread of infectious diseases, the consequences of alcohol and drug misuse, or the occurrence of violence and crime. Public and community health nursing advocates for a healthy society established on a foundation of social justice. Community and public health nurses are daily confronted with the consequences of social inequalities in health. Nurses reach deep into families and communities and provide care to wider population in a complex work environment [16,21,44].

Public health and community nurses incorporate the identified needs of the population in policy development and program or service planning, evaluates effectiveness of advocacy and strives to resolve conflicting expectations from populations, providers and other stakeholders [18].

Our study has a number of limitations. Initially, a limitation is the fact that only the studies that used SF 36 been selected, however is one of our inclusion criteria and one of the most trusted tools to investigate the quality of life. Another limitation is the fact that the investigation was limited to Europe, although the population is as homogeneous as possible.

Conclusions

Over the past two decades, social inequalities in health became a scientific, academic, research, political and social issue. The economic crisis of recent years has highlighted the social inequalities in the most basic question in relation to the overall health of a country.

The global life expectancy curve, which appears to have a tremendous increase in the proportion of the population that manages to live up to an older age, urges societies to an increased understanding of how to ensure health and quality of life at older ages.

Differences in the professional class, which relate to physical functioning, appear to be widening. There is a reduction in physical function in lower professional classes. Various health behaviors, the employment status and material conditions may explain to some extent the widening of differences in physical function of the professional classes.

The majority of studies show that gender, as a factor, affects the risk factor patterns and this has a different impact on the quality of life. For this reason, gender specificities should be considered in health prevention strategies.

All health and care professionals should have a better understanding of the causes and consequences of health inequalities so that services that reduce health inequalities become an intrinsic part of care services.

Public and community health nurses advocate for government policy to address these issues could result in important changes to reduce income inequality and improve the health of the population. Nurses, together with other health professionals, must create a climate where socioeconomic differentials are unacceptable, and thus remain true to one's heritage of advocating for a healthy society.

Competing Interests

None declared.

Authors' Contributions

PE, CK and NM planned the study. PE performed the database search and analyzed the data. PE searched the literature and drafted the manuscript. All authors participated in the selection of inclusion criteria. All authors assisted with the manuscript and read and approved the final manuscript.

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