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Loneliness among surgical patients - measuring levels of loneliness using De Jong Gierveld Loneliness Scale and Revised UCLA Loneliness Scale

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ABSTRACT

Objective: Loneliness is a state that most people will experience during their lifetime. In order to raise awareness of loneliness and its complexity, we attempted to measure the span of loneliness among the surgical patients hospitalized in the Department of Surgery in the 4th Military Teaching Hospital in Wrocław.

The aim of this study was to establish correlations between loneliness, measured using and four other variables: age, gender, nutritional state and quality of life of surveyed patients.

Material and methods: A total of 100 patients in the Surgery Department in the 4th Military Teaching Hospital in Wrocław, Poland, were enrolled. The Mini-Nutritional Assessment (MNA) questionnaire was used to assess their nutritional status; the World Health Organization Quality of Life Scale (WHO-QoL-BREF) was used to assess their quality of life; the De Jong Gierveld Loneliness Scale (DJGLS) and Revised UCLA Loneliness Scale (R-UCLA) were used to assess their loneliness level.

Results: The WHO-QoL-BREF showed that patients' quality of life (QoL) self-perception was between average and good, health self-perception was average as well. Lowest score of QoL was found in the physical domain whereas the highest was found in the social domain. The MNA showed that 8% of the study group was malnourished, 49% at risk of malnutrition

and 43% displayed a normal nutritional status. 49% of the study group experience loneliness during study by DJGLS. A significant positive correlation between loneliness status and QoL was observed in physical health

self-perception ($r=0,226$, $p=0,024$). Negative correlation was found between loneliness and QoL in psychological, social and environmental domains ($p<0,001$).

Conclusions: Loneliness has a significant negative impact on the quality of life. Sex, age and nutritional status can not be predictors of patient's loneliness. More than half of patients were in a disturbing nutrition state.

Keywords: loneliness; malnutrition; quality of life (QoL).

INTRODUCTION

Loneliness is a state which, at some point in life, most people are expected to experience.

Data provides us with a complex evolution of loneliness in a lifetime: under 18 years of age about 80% of respondents reported feeling lonely, then levels of loneliness gradually diminish throughout the middle adult years, while increasing again in adults over 65 - at that age up to 40% of respondents expressed feeling lonely at least sometimes. This percentage increases with age progression [1-3].

Previous findings clearly state that loneliness is a positive predictor for coronary heart disease and cardiovascular mortality [4,5]. It can also increase the threat of mental and neurological disorders, such as Alzheimer's disease [6], depressive states [7], personality disorders and psychoses [8-10].

With the above results and their severity in mind, we decided to conduct our own experiment to raise awareness in ourselves and fellow students from our Student Research Club K180 As future physicians we aspire to provide the most adequate care to patients and mind not only health, but also their general well-being. We believe that the sooner the signs of loneliness are noticed and perceived as a major threat for above illnesses, the better health outcomes of patients.

In this study, we opted for establishing correlations between the loneliness experienced by surveyed patients, their nutritional status and quality of life.

METHODS

The study was carried out on 100 patients, including 45 women and 55 men, hospitalized in the Department of Surgery in the 4 th Military Teaching Hospital in Wroclaw, Poland from June 2022 to August 2022.

Four questionnaires were used to assess the current physiological and psychological conditions of investigated patients: Mini Nutritional Assessment – MNA (Nestle Nutrition Institute), World Health Organization Quality of Life Scale – WHO-QoL-BREF and two standardized scales intended for determining the subjective level of loneliness: 11-item De Jong Gierveld Loneliness Scale (Polish adaptation by Paweł Grygiel, Grzegorz Humenny, Sławomir Rębisz, Piotr Świtaj, Justyna Sikorska, 2012) and Revised UCLA Loneliness Scale (Polish adaptation by Kwiatkowska, M.M., Rogoza, R., Kwiatkowska, K., 2016).

The Mini Nutritional Assessment (MNA) was used to assess the nutritional status of the patient [11, 12]. It contains questions related to: decline of food intake and weight loss in the past 3 months, neuropsychological problems, independence in living and eating, lifestyle, dietary habits, self-assessment of health and nutrition status and objective anthropometric measures (BMI, mid-arm and calf circumference). The maximum possible score is 30 points. Normal nutrition status ranges from 24 to 30 points. Score between 17 and 23.5 points indicates that a patient is at risk of malnutrition. Result below 17 points indicates that the patient is malnourished [13].

World Health Organization Quality of Life Scale (WHO-QoL-BREF) is a quality of life evaluation created and developed by the WHOQOL Group to develop the assessment that could be applicable cross-culturally [14]. WHO-QoL-BREF consists of 26 questions with a 5-point Likert scale each. It comprises two global questions (quality of life and physical health self-perception) and four domains: physical, psychological, social relationships and environment. In both global questions the higher (from 1 to 5) answers indicate the better self-assessment of QoL and health. Domains results could be transformed to 4-20 or 0-100 points score. Results can not be categorized to any classes. Higher score indicates better QoL of the individual.

The first scale to assess the loneliness level was De Jong Gierveld Loneliness Scale [15] in full version, containing 5 positive and 6 negative statements with each one featuring a 5-point Likert scale. Results of DJGLS comprise 3 categories: emotional loneliness score (0-6 points), social loneliness score (0-5 points) and total loneliness score (0-11 points), combining the previous ones. Higher number of points in every category indicates a more significant loneliness feeling in the individual. Based on the interpretation of the DJGLS, the

following classes of total loneliness score were defined: not lonely (0–2 points); moderate loneliness (3–8 points); severe loneliness (9–10 points); very severe loneliness (11 points). The Polish version was validated by Grygiel et al. [16].

To complement the assessment of loneliness the Revised UCLA Loneliness Scale [17] was used. The R-UCLA comprises 9 positive and 11 negative statements followed by a 4-point Likert scale from 1 (never) to 4 (often). This score focuses on the satisfaction or dissatisfaction of individuals' social relations. The results are in the 20-80 points range. Higher score is an indication of a more relevant loneliness of the individual. The Polish version was validated by Kwiatkowska et al. [18].

We approached 110 patients within the time of the research. 10 of which declined to take part in the study. The research team held a 30 minute conversation with each patient, during which the answers to questionnaires disclosed above were collected.

The study was carried out according to the Helsinki Declaration and the authorization to perform this study was obtained from the Wrocław Medical University Ethical Committee (approval number: KB-966/2022). All respondents were over the age of 18 years old and they were informed about the aim of the study. The informed consent was obtained from each patient before data collection.

STATISTICAL ANALYSIS

The results of the study were collected in a Google Sheets spreadsheet and statistically analyzed. Comparison between two groups were assessed using Mann-Whitney's U test. For the comparison of three or more groups, the Kruskal-Wallis test with the Dunn's for post-hoc test were used. Correlations were determined using Spearman's rank correlation coefficient. The criteria for statistical significance were set at $P < 0.05$. The data were analyzed for normality using the R Package for Statistical Computing v. 4.2.1.

Parameters		N=100 (%)
Sex	Female	45 (45%)
	Male	55 (55%)
Age (years)	Mean (SD)	54,89 (15,29)
	Median (quartile)	56 (43-67)
	Range	21-86

Table 1. Characteristics of the study group

RESULTS

The study group included 45 women and 55 men (100 patients in total) with mean age of 54,89 (SD=15,29) years. The general characteristics of the study group are presented in Table 1.

8% of the group was malnourished and 49% was at the risk of malnutrition. Rest of the group (43%) was in normal nutritional status.

In WHO-QoL-BREF patients evaluated their QoL self-perception between “Neither poor nor good” and “Good” (mean 3.6 SD=0.82). Health self-perception mean score was 2.91 (SD=1.03), which represents “Neither satisfied nor dissatisfied”. From all four domains of QoL, patients found social relationships domain as the best one, slightly better than psychological domain and environment domain. The lowest evaluation in the study group was found in the physical domain. Results of WHO-QoL-BREF are presented in Table 2 and 3.

QoL self-perception	n	%
Very poor	3	3%
Poor	5	5%
Neither poor nor good	28	28%
Good	57	57%
Very good	7	7%
Health self-perception		
Very dissatisfied	8	8%
Dissatisfied	31	31%
Neither satisfied nor dissatisfied	25	25%
Satisfied	34	34%
Very satisfied	2	2%

Table 2. WHO-QoL BREF global questions results

WHOQoL BREF	N	Mean	SD	Median	Min	Max	Q1	Q3
Physical domain	100	12,96	2,81	13	6	18	11	15
Psychological domain	100	15,16	2,27	15	9	20	13	17
Social Relationships domain	100	15,37	2,75	15	8	20	13	17
Environment domain	100	14,81	2,32	15	8	20	13	16

Table 3. QoL domains results

Two scales were used to measure the level of loneliness. In DJGLS 51% of patients were not lonely and 49% felt different intensity of loneliness. 43% of the whole group was found as moderate lonely, 4% - severe lonely and 2% - very severe lonely (Figure 1). In R-UCLA the mean number of points per question was 1.92. Mean score of the questionnaire was 38.4 (SD=10.58). As “rarely” was found the prevalence of feeling lonely, characterized by statements in the questionnaire. Results of R-UCLA score are presented in Table 4.

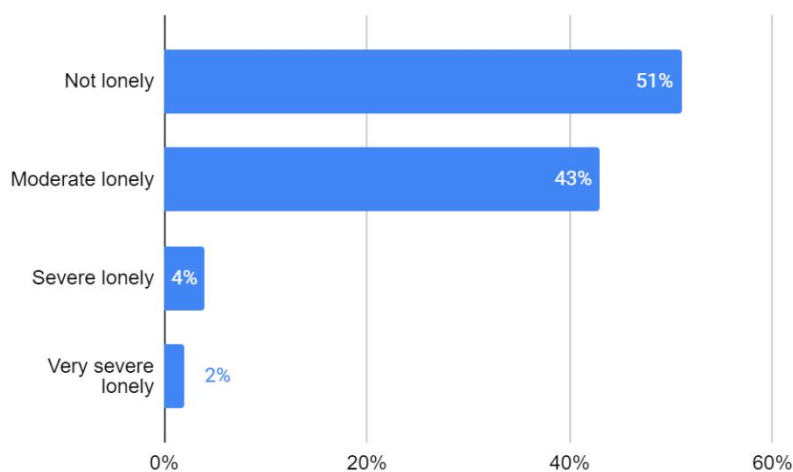


Figure 1. DJGLS results

R-UCLA [points]										
Points range	N	Lack of data	Mean	SD	Mean per question	Median	Min	Max	Q1	Q3
20-80	100	0	38,4	10,58	1,92	38	20	60	29	48

Table 4. R-UCLA domains results

Analysis of study's results showed that DJGLS total loneliness score positively correlates ($r=0,226$, $p=0,024$) with physical health self-perception, therefore the greater the score of loneliness, the better the quality of life in this domain. Similar correlation with R-UCLA was not found. Both loneliness questionnaires showed similar results in correlation between loneliness and QoL in psychological, social and environmental domains (r from -0.557 to -0.446 , $p<0,001$). Loneliness correlates significantly and negatively with QoL domains mentioned above (Table 5).

WHOQoL BREF	Loneliness DJGLS	Loneliness R-UCLA
	Spearman's correlation coefficient	Spearman's correlation coefficient
Quality of life self-perception	$r=-0,077$, $p=0,445$	$r=-0,1$, $p=0,324$
Physical health self-perception	$r=0,226$, $p=0,024$	$r=0,187$, $p=0,063$
Physical domain	$r=-0,135$, $p=0,18$	$r=-0,171$, $p=0,09$
Psychological domain	$r=-0,446$, $p<0,001$	$r=-0,557$, $p<0,001$
Social relationships domain	$r=-0,549$, $p<0,001$	$r=-0,512$, $p<0,001$
Environmental domain	$r=-0,506$, $p<0,001$	$r=-0,472$, $p<0,001$

Table 5. Comparison of loneliness level by DJGLS and R-UCLA scores with six realms measure in WHO-QoL-BREF

No differences were shown in loneliness between females and males. Results of the analysis are presented in Table 6.

Loneliness	Gender	N	Mean	SD	Median	Min	Max	Q1	Q3	p
DJGLS total loneliness score	Female	45	3,47	2,96	4	0	10	0	5	$p=0,425$
	Male	55	3,09	3,44	2	0	11	0	5	
DJGLS emotional loneliness score	Female	45	2,11	1,87	2	0	6	0	3	$p=0,097$
	Male	55	1,51	1,89	1	0	6	0	3	
DJGLS social loneliness score	Female	45	1,36	1,58	1	0	5	0	2	$p=0,673$
	Male	55	1,58	1,82	1	0	5	0	3	
R-UCLA score	Female	45	38,91	10,55	38	20	56	30	48	$p=0,632$
	Male	55	37,98	10,68	38	20	60	29	47	

Table 6. No correlation was found between sex and loneliness.

Older patients were less likely to feel social loneliness measured in DJGLS score - negative correlation between age and social loneliness scale. Comparable correlations was not found between age and other parts of DJGLS score and R-UCLA score (Table 7)

Loneliness	Age
	Spearman's correlation coefficient
DJGLS total loneliness score	$r=-0,186, p=0,064$
DJGLS emotional loneliness score	$r=-0,163, p=0,105$
DJGLS social loneliness score	$r=-0,198, p=0,049$
R-UCLA score	$r=-0,138, p=0,17$

Table 7. Correlations between age of patients and loneliness

Analysis of MNA, DJGLS and R-UCLA showed a lack of correlation between nutrition status and loneliness in the study group. Results are presented in Table 8

Loneliness	MNA
	Spearman's correlation coefficient
DJGLS total loneliness score	$r=-0,1, p=0,322$
DJGLS emotional loneliness score	$r=-0,136, p=0,176$
DJGLS social loneliness score	$r=-0,027, p=0,789$
R-UCLA score	$r=-0,191, p=0,057$

Table 8. Nutritional status does not correlate with loneliness score

DISCUSSION

Comparing loneliness and quality of life: In 2011, Yang and Victor [19] estimated the prevalence of loneliness in Poland to be 20.1% among people aged from 15 to 101. We suspected that the outcome would be similar to our findings.

Results obtained from the de Jong Gierveld Scale appear as follows: 51% of surveyed patients did not disclose experiencing loneliness, 43% experienced moderate loneliness, 4% experienced significant loneliness and 2% experienced highly significant loneliness.

Results obtained from the R-UCLA Loneliness Scale showed that respondents experienced loneliness rarely.

Our working hypothesis suggested that loneliness negatively affects one's quality of life. When comparing the quality of life (measured with WHOQoL-BREF) with loneliness (measured with both de Jong Gierveld Scale and R-UCLA Scale), we observed a significant negative correlation between the two questionnaires in all three loneliness' domains: psychological, social and environmental. This means that the more lonely one feels, the worse their quality of life is, in all three domains.

Furthermore, evidence suggests that social isolation or loneliness is supposed to be a crucial risk factor for physical and mental illness in later life and broad-based morbidity [20], therefore we should consider it as a threat to the well-being and health of the Polish population.

Comparing loneliness and age: When it comes to the social concept of loneliness, it is often associated with age progression. Yang and Victor propose that reality is more complex than that, since some data shows that it is actually adolescence that is the loneliest period of one's life [19]. Simultaneously, their results indicate that the prevalence of loneliness increases with age within the researched sample (total sample size across 25 European nations: 47 099 with the age range: from 15 to 101) [19].

The group of patients we investigated were aged from 21 to 86.

The results obtained from this group using de Jong Gierveld Loneliness Scale suggest a negative correlation between age and social loneliness, which means that the older the patient is, the less severe the feeling of

loneliness in the social domain of the de Jong Gierveld Loneliness Scale. There was no significant correlation between loneliness and the psychological domain of the scale.

The R-UCLA Loneliness Scale on the other hand showed no statistically significant correlation between loneliness and age.

Comparing loneliness and gender: Borys and Perlman reported that women admit to being lonely more frequently than men [21].

Pagan [22] studied correlation between gender and loneliness in Germany and found that in general males report lower loneliness scores as compared to females, which was consistent with Borys' and Perlman's findings. Decision was made to investigate the correlation as well.

As a predictor for loneliness, gender seems to have inconclusive influence, since the results on that matter are contradictory. For example, various studies [23-25] have found that females are more likely than males to report higher levels of loneliness, while others disclosed the opposite result [26,27]

Interestingly, some previous studies report that statistically significant gender differences in loneliness scales are rarely found while using the UCLA scale [21], which is consistent with the results of this study, since no significant correlation between gender and the feeling of loneliness in both R-UCLA Loneliness Scale and de Jong Gierveld Loneliness Scale was showed.

Comparing loneliness and nutrition: Our results show that 49% of participants were at risk of malnutrition, 43% were well-nourished, whereas 8% were malnourished. Enisa Ramic et al stated that loneliness is a significant predictor of the risk of malnutrition and malnutrition [28]. They also found that 50% of surveyed elderly patients (>65 years of age) suffered from malnutrition [28].

On the contrary, according to the results of this study, the percentage of malnourished patients was noticeably lower, as stated above, and there seems to be no significant correlation between the nutritional state and the feeling of loneliness in both R-UCLA Loneliness Scale and de Jong Gierveld Loneliness Scale.

Limitation of the study: This paper is a preliminary report. Due to the time constraints, detailed data will be presented and addressed in the future.

CONCLUSIONS

Negative influence of loneliness on the quality of life is significant. Medical professionals should be supposed to consider a patient's loneliness and QoL because of the influence of these factors on physical health. However, sex, age and nutritional status can not be predictors of individual's loneliness. More than half of patients were in a disturbing nutrition state in the evaluation by MNA.

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