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QUALITY OF LIFE OF ELDERLY PATIENTS WITH CORONARY ARTERY DISEASE AT ZAGAZIG HOSPITALS

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Abstract:

Background: Coronary artery disease (CAD) is considered as the leading cause of mortality worldwide, elderly patients suffering CAD need educational programs aimed at promoting healthy lifestyles among them in order to improve their QoL. **Aim**: The study aimed to assess quality of life among elderly patients with coronary artery disease at Zagazig hospitals. **Study design:** A cross sectional descriptive design was used in this study. **Setting:** The study was conducted in the cardiology outpatient clinic at Zagazig University Hospital and Al-Mabarrah hospital at Zagazig Hospitals. **Sample:** A purposive sample of 165 elderly patients with coronary artery disease since at least one year and free from major illness such as uncontrolled diabetes mellitus, cancer and renal failure. **Tools of data collection:** A tool was used for data collection was consisted into two parts which included demographic characteristics and patient interview questionnaire quality of life. **Results**: The results revealed that elderly patients with coronary artery disease in the study settings have generally low quality of life. The highest median score was in sexual QoL (4.00) followed by the social QoL (3.18). On the other hand, the lowest score of QoL was in the physical QoL domain in both physical (2.08) and sleep (1.80). **Conclusion:** The study findings lead to the conclusion that elderly patients having generally low quality of life. This is particularly evident regarding physical QoL and sleep. Meanwhile, they have good social and sexual QoL. **Recommendations:** Elderly patients suffering CAD needs educational programs aimed at promoting healthy lifestyles among them in order to improve their QoL.

Keywords: Quality of life, Elderly Patients, Coronary Artery Disease, Hospitals

Introduction:

Coronary Disease is a group of diseases that include both the heart and blood vessels, including coronary heart disease (CHD), coronary artery disease (CAD), and acute coronary syndrome (ACS) [(1)]. The incidence of coronary artery disease in elderly, reached 19.9% in men and 9.7% in women. 11.3% of men and 4.2% of women in this age group have had a myocardial infarction. For the age> 80 years old group, coronary artery disease reached 32.2% in men and 18.8% in women. 17.3% of men and 8.9%of women in this age group have had a myocardial infarction [(2)].

Coronary heart disease deaths in Egypt reached 107,232 or 23.14% of total deaths. The age-adjusted death rate is 186.36 per 100,000 of population, ranks Egypt 23 in the world [(3)]. Assessment of health-related quality of life has become increasingly important in the management of cardiac patients. Many patients consider the quality of the additional life years gained just as important as length of life [(4)]. Furthermore, there is evidence in cardiac patients that HRQoL predicts adverse health outcomes including mortality and hospitalization, independent of the more traditional risk factors. The goal of

contemporary management, therefore, is not only simple to extend life expectancy, but also to ensure a sufficiently high long-term HRQoL, defined by emotional, social, and physical well-being [5]. Gerontological nurse plays an important role in patient with coronary artery disease which include screening for the risk factors of CHD and introducing interventions for them. Reduction in the risk factors will ultimately lead to a reduction in the morbidity and mortality from CHD [6]. Also gerontological nurse plays important role as educator. The patient education should start immediately after the diagnosis of the disease. Nurses could achieve this goal more effectively because their contact and interaction with the patient is more than other healthcare professionals are. The role of the nurse is dynamic in the management of cardiac diseases as they are close to the patients and families during hospitalization. The role of the nurse as educator is important to meet the needs of patients through education, support, supervision and reinforcement [7].

Significance of the study

Coronary heart diseases (CHD) are one of the leading causes of death, according to American heart association statistical (AHA) about 80% of people who die of CHD are age 65 or older. For the 60–79-year-old age group, the following have CHD: 21.1% of men; 10.6% of women for the 60–79-year-old age group, the following have CHD: 21.1% of men; 10.6% of women because women have heart attacks at older ages than men, they're more likely to die [8]. Modern treatments nowadays focus not only on improving life expectancy, symptoms and functional status, but also quality of life. Thus, an improvement in health-related quality of life (HRQL) is considered to be important as a primary outcome and in the determination of therapeutic benefit [9]. So the study will be conducted to assess quality of life among elderly with coronary artery disease

Aim of the study

The aim of the study was to assess quality of life among elderly patients with coronary artery disease at Zagazig hospitals.

Research questions

1. Determine the effects of coronary artery disease among elderly patients on their quality of life?
2. What are the factors that could influence the quality of life among elderly patients with coronary artery disease?

Subjects and methods

Research Design

A descriptive cross sectional design was used in conducting the study.

Study Setting

The study was conducted in the cardiology outpatient clinic at Zagazig university hospitals and cardiology outpatient clinic at Al-Mabarrah Hospitals Cardiology outpatient clinic at Zagazig University Hospitals is located in the upper second floor with two rooms. In addition, there are nursing room, and a waiting room in front of the clinic. The clinic works from Saturday until the end of the week and rate of cases per week ranges from 10 to 12 cases.

Cardiology outpatient clinic at Al-Mabarrah Hospital is located in the upper second floor with one room. In addition, there are nursing room, and a waiting room in front of the clinic. The clinic works from Saturday until the end of the week and rate of cases per week ranges from 15 to18 cases.

Study Subjects

A purposive sample composed of 165 Patients suffering from coronary artery disease (110 at Zagazig University Hospitals, and 55 at Al-Mabarrah Hospitals), who met the following criteria:

Inclusion criteria:

1. Elderly: 60 years age or older,
2. Diagnosed as having coronary artery disease (CAD) since at least one year,
3. Free from major illnesses such as uncontrolled diabetes mellitus, cancer, and renal failure.
4. Accept to participate in the study.

Tool of data collection:

A tool was used to collect the necessary data for achieving the study objectives and it included two parts.

Part A: This was for collecting data pertaining to demographic and socioeconomic characteristics. This part was adapted by ***El-Gilany et al. (2012)***. After modifying its scoring system, it was composed of 10 questions as age, sex, education and marital status, etc. **(Q1-10)**.

- **Scoring system:**

  The total score of socioeconomic level was **(62)**. After modifying the scoring system of **El-Gilany et al., 2012).** As follow, **education and cultural domain** the total score was **(14)**, **occupation domain (5)**, **family possession domain (12)**, **family domain (10)**, **home sanitation domain (12)**, **economic domain (4)**, **healthcare domain (5).** The scores were summed, and converted into a percent score. They were categorized into "low": <50% with a total score (<30) considered "middle" if they were between 50% - <75% with a total score (30 - <46), and finally considered "high" if they were >75% with a total score (≥46).

  Part B: This part collected information about the quality of life for elderly with CAD guided by **(*Padilla and Grant, 1985; Raphael et al., 1997*)** [11, 12]**.** It is composed of five domains as follows.

  ❖ **Domain 1: Was composed of Physical functions and sleep. Physical functions: - 13** items based on ***Ishii. (1995)*** [13]***, John et al. (1995)*** [14], and ***Jones. (1996)*** [15]: such as presence of dyspnea, chest pain, heartburn, dependence on others, etc.

  (Q11-23). Sleep: 4 items based on ***Ishii. (1995)*** [13]***, John et al. (1995)*** [14], and ***Jones. (1996)*** [15]: such as having problem to start sleep, satisfaction with, sleep quality, etc. **(Q24-27).**

  ❖ **Domain 2: Psychological functions: - 21** items based on ***Brezinka and Kittel. (1995)*** [16]***, Cauly. (1995)*** [17] and ***Engler. (1995)*** [18] such as, enjoy life, optimism, feeling depressed, impact of lonely feelings, memorization, etc. **(Q28-48).**

  ❖ **Domain 3: Spiritual functions: - 13** items based on ***Blazer. (1991)*** [19]***, Burnard. (1993)*** [20]***, Berggren and Griggs. (1995)*** [21]***, Espeland. (1999)*** [22] and ***Jochen et al. (2001)*** [23]: such as having an aim in life, having beliefs, practicing religious orders, going to mosque/church, etc**.** **(Q49-61).**

  ❖ **Domain 4: Social functions: -** 10 items based on ***Kaplan and Keil. (1993)*** [24] ***and Brown and Garber. (2000)*** [25]**:** such as ability to fulfill a role in the family, feeling happy with friends, availability of social activities, etc. **(Q62-71).**

  ❖ **Domain 5: Sexual functions: - 3** items based on ***Laurent et al. (1995)*** [26]: such as difficulties in sexual life due to illness and satisfaction with sexual life **(Q72-74).**

  - **Scoring system:**

  The response to each statement was on a 5 point Likert scale from "never" to "always." These were scored from 1 to 5 respectively. The total score was (320). The scores were reversed for negative statements so that a higher score indicates better QoL. The scores of each domain and for the total scale are summed-up and divided by the number of items giving a mean score with minimum "1" and

maximum "5." Means, standard deviations, medians and quartiles were calculated.

- **Content validity**

❖ **Validity and Reliability:**

For face and content validity, jury's opinions were elicited. These included three experts from faculty of nursing at Zagazig University specialized in medical, surgical nursing and community nursing and faculty of medicine at Zagazig University specialized in community medicine. They examined the tool regarding the tool format, layout, and the relevance and appropriateness of each item to be included in the questionnaire sheet and the scoring system. Based on their comments and recommendations, corrections, addition and or omission of some of items were done. It showed a good level of reliability with Cronbach's Alpha coefficient **0.838**

- **Pilot Study**

A pilot study was carried out on 17 elderly patients representing approximately 10 % of the total study sample. Its purpose was to test the clarity, feasibility, practicability of the tool. The tool was finalized based on the pilot results. Those elderly patients in the pilot were not included in the main study sample.

- **Field work**

The process of data collection was started once all official permissions were obtained. The researcher first introduced herself and explained the purpose of the research briefly to all patients in the study settings. Informed consents were obtained to participate after simple and clear explanation of the purpose of the study. Each patient was interviewed individually in the unit using the interview form. The researcher reads each item of the questionnaire slowly and clearly to be well understood.

The time consumed for completing the interview with each subject, and to fill the questionnaire form, ranged from 30 to 40 minutes. The researcher carried out the fieldwork four days weekly: Saturday, Sunday, Monday and Thursday. The process of data collection lasted from August to December 2016.

- **Ethical considerations**:

An official permission was obtained from the administration of the Faculty of Nursing Zagazig University. Letters were addressed to the cardiology outpatient clinic at Zagazig University Hospitals and the clinics at Al-Mabarrah Hospital explains the aim of the study and the process of data collection. The study protocol was approved by the research ethics committee at the Faculty of Nursing, Zagazig University. Informed consent for participation was obtained from each subject after full explanation of the aim of the study and its procedures. Participants were given the opportunity to refuse participation, or to withdraw at any stage of the data collection. They were reassured that the information would be confidential and used only for research purposes. The researcher ensured the anonymity and confidentiality of any obtained information. No harms could be anticipated on participants.

- **Statistical design**

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means, standard deviations, medians, and interquartile ranges for quantitative variables. The Cronbach alpha coefficient was calculated to assess the reliability of the developed tools through their internal consistency.

Quantitative continuous data were compared using the non-parametric Mann-Whitney or Kruskal-Wallis tests. The Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to identify the independent predictors of the scores of QoL, multiple linear regression analysis was used and analysis of variance for the full regression models done. Statistical significance was considered at p-value <0.05.

- **Results:**

Table 1: The study included 165 elderly patients whose age ranged between 63 and 89 years, with a median 69.0 years, with 55.8% males as presented in table 1. Additionally, 53.9% of the studied participants were illiterate, and 77.6% of them were married. Moreover, 32.7% of them had no job.

Figure 1: Illustrates that 61.2% of the elderly in the study sample were living in rural areas.

Table 2: Regarding to elderly socioeconomic characteristics, table 2 demonstrates that 52.7 % of the sample were living in households with crowding index 2-4 persons per room, and 25.5% of them owned their homes. Moreover, 50.9% of the elderly in the sample had sufficient income and had subsidies (54.5%).

Figure 2: Demonstrates that 47.9% of the elderly were using governmental settings, while 41.8% of them were using the health insurance services.

Figure 3: Illustrates, 63.6% of the elderly in the study sample were in the middle socioeconomic level. Meanwhile, 17% were on the highest level.

Table 3: Indicates that the QoL scores of the elderly in the study sample were generally low. The highest median score was in sexual QoL (4.00) followed by the social QoL (3.18). On the other hand, the lowest score of QoL was in the physical QoL domain in both physical (2.08) and sleep (1.80). The median total QoL score was 2.77, which denotes average QoL in the scale.

Table 4: In multivariate analysis, table 4 shows that the statistically significant independent positive predictor of the elderly's QoL score was the educational level, while age was a negative predictor. The model explains 7% of the variation in the physical QoL score. None of the other elderly' characteristics had a significant influence on this score.

Table 5: As for the social QoL score, table 5 indicates that the statistically significant independent positive predictors were the female gender and the crowding index. Conversely, the income and the socioeconomic level were negative predictors. The model explains 54% of the variation in the social QoL score. None of the other characteristics had a significant influence on this score.

Table 6: Regarding the sexual QoL score, table 6 demonstrates that the statistically significant independent positive predictors were the elderly's age and crowding index. On the other hand, their income was a negative predictor. The model explains 17% of the variation in this QoL score. None of the other characteristics had a significant influence on this score.

Table 7: Overall, table 7 shows that the statistically significant independent positive predictor of the elderly's total QoL score was the educational level, while the socioeconomic level was a negative predictor. The model explains 42% of the variation in the total QoL score. None of the other elderly's characteristics had a significant influence on this score.

Discussion:

Coronary artery diseases are the most important cause of morbidity and mortality worldwide, particularly in older age. They have a negative impact on the physical,

mental, psychological, social, and occupational functioning of these patients, with the deterioration of their quality of life (QoL) [5]. Patients with CAD are mostly anxious about worsening of symptom and physical functions as well as about the changes in their social roles due to their illness. Moreover, these patients have high rates of hospitalization and cardiac death [27]. A healthier lifestyle could extend these patients lives and additionally improve their QoL [28] whereas disease complications lower it. So the aim of this study was to assess the Quality of Life (QoL) among elderly patients with coronary heart disease (CAD) at Zagazig hospitals. [29].

Concerning the answering of the research question regarding the effects of coronary artery disease among elderly patients on their quality of life, the findings of the present study revealed that the QoL scores of these elderly patients are generally low, particularly regarding physical functioning and sleep. Meanwhile, they have good social and sexual QoL.

According to the current study findings, the physical QoL of the elderly with CAD had the lowest scores among the various QoL domains. This was noticed in both physical functioning and sleep. Concerning physical functioning, it is obvious that CAD leads to limitation of efforts of the patient due to the recurrent symptoms, especially angina pain. Added to this is the fear of getting the pain, which leads the elderly to restrict his/her activities. The situation is even worse when the additional negative effects of aging on physical functioning are considered. In agreement with this finding, a study on **Brazilian** cardiac patients [30] revealed that the physical domain of QoL was the lowest, while the social domain was the highest.

These foregoing present study results are in line with ***Rancic et al. (2013)*** [31] in **Serbia** who found that the most important factor affecting QoL after acute myocardial infarction was chest pain. Furthermore, ***Staniute et al. (2014)*** [32] in **Palanga** and **Lithuania** who reported that patients with CAD had poor healh related quality of life associated with greater fatigue and decreased exercise capacity. On the same line, ***Sin et al. (2015)*** [33] in **San Francisco** highlighted that activity limitation and lower exercise capacity in older adults with stable CAD lead to declines in their functional status. Furthermore, a study in **Singapore** identified depression as a significant independent predictor of physical QoL among cardiac patients [34].

Concerning the low QoL due to sleep problems among the elderly, patients with CAD in the present study, this be explained by the atherosclerotic changes of old age. Added to this, is the fear of dyspnea and angina attacks during sleep, and even the fear of sudden particularly among those elderly living alone. These may lead to insomnia and low sleep quality. These findings were in agreement with ***Gonzaga et al. (2015)*** [35] in **Sao Paulo** who found a significant association between CAD and obstructive sleep apnea (OSA), and those predicted worse cardiovascular outcomes among such patients. On the same line, ***Le Grande et al. (2016)*** [36] in **Australia** added that sleep disturbance was highly prevalent in patients with CAD, and it had a negative impact on their treatment adherence, self-efficacy and psychological outcomes.

Furthermore, the sleep disorders could be attributed to the changes in the vasculature due to aging, with lowered blood flow to the brain, thus impairing sleep functions. In agreement with this, ***Picano et al. (2014)*** [37] in **Italy** proclaimed that the cardiovascular changes associated with aging can lead to decreases in brain perfusion. This would have negative influences on the sleep centers

and functions. It would also lead to degenerative changes in the brain, resulting in premature dementia.

Concerning the answering of the research question regarding factors that could influence the quality of life among elderly patients with coronary artery disease, the findings of the multivariate analyses revealed that the elderly age was a negative predictor of the physical QoL, but a positive predictor of the psychological and sexual QoL. The negative relation with the physical QoL is expected since the physical functions and strength deteriorate with advancing age. As regards the positive influence of age on the psychological QoL, it could be explained by the state of "peace-of-mind" elderly people gain with increasing age. Meanwhile, the positive relation between age and sexual QoL supports the aforementioned explanation of over-estimation of ability for self-satisfaction and for a better image. A similar negative association between cardiac patients' QoL and their age was reported in a study in **Brazil** [(38)].

The level of education of the elderly with CAD in the current study was identified as a positive predictor of their physical and psychological QoL, and of their total QoL as well. The relation with physical QoL could be explained by a higher health awareness and health behavior associated with higher education. This could help elderly people to be able to better maintain their physical health. As for the positive impact of education on the psychological QoL, it could be attributed to better coping abilities, which might protect them from negative psychological feelings such as stress, anxiety, and depression. The findings are in agreement with those of a study in **Belgium**, which revealed a significant negative association between the level of education of CAD patients and their QoL [(39)]. Moreover, a study in **Denmark** demonstrated the positive impact of learning coping strategies on the QoL of CAD patients [(40)].

Concerning the, socioeconomic level and its impact on the QoL of elderly patients with CAD, the present study multivariate analysis identified it as a positive predictor of the psychological, social, and spiritual QoL, and in addition the total QoL. This is quite plausible since the lower socioeconomic conditions add to the suffering of these people, thus increasing their stress and pessimism, augmenting their social isolation, and probably shuttering their faith. In congruence with this, a recent study carried out in the **United States** by ***Verma et al. (2017)*** [(41)] demonstrated that a higher socioeconomic level was associated with better QoL among patients with chronic cardiac diseases.

- **Conclusion**

The study findings lead to the conclusion that elderly persons having coronary artery disease (CAD) in the study settings have generally low quality of life (QoL). This is particularly evident regarding physical QoL and sleep. Meanwhile, they have good social and sexual QoL. Their QoL is influenced by most of their demographic characteristics such as age, gender, education, income, and particularly by their socioeconomic level. This latter has a negative impact on their psychological, social, spiritual, as well as total QoL. These elderly people need social support to improve their QoL.

- ***Recommendations***

Based on the main study findings, the following recommendations are suggested.

1. Elderly persons suffering CAD need educational programs aimed at promoting healthy lifestyles among them in order to improve their QoL, and targeted to elderly older than seventy years, with low education, and low socioeconomic levels.

2. Gerontological nurses should deploy more efforts in educating these patients about risky behaviors, and in rehabilitating them to their new physical condition.
3. These patients need to be trained in physical activities in order to improve their physical QoL. This would have a positive repercussion on their psychological and social QoL.
4. Support groups are suggested in order to help these patients to cope with stress, and relieve their anxiety and depression symptoms, which would ameliorate their psychological QoL.
5. Periodic psychosocial risk factor assessment should also be considered for these patients.

Further studies are recommended to explore the value of nursing intervention, educational programs targeted to CAD elderly on their QoL.

Table 1: Demographic characteristics of elderly in the study sample (No=165)

Demographic characteristics	Frequency	Percent
Age: (in years)		
60-	101	61.2
70-89	64	38.8
Range	63.0-89.0	
Mean±SD	70.2±5.4	
Median	69.0	
Gender:		
Male	92	55.8
Female	73	44.2
Education:		
Illiterate	89	53.9
Basic	41	24.8
Intermediate	19	11.5
University	16	9.7
Marital status:		
Married	128	77.6
Unmarried (single/divorced/widow)	37	32.4
Previous job:		
Unemployed/housewife	54	32.7
Employee	44	26.7
Worker	67	40.6

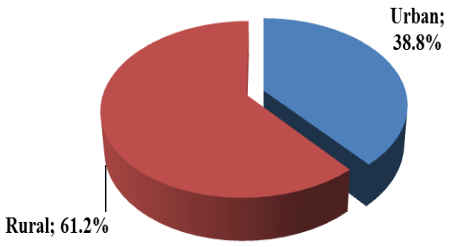

Figure 1: Distribution of elderly in the study sample according to residence (No=165).

Table 2: Socio-economic characteristics of elderly in the study sample (No=165)

Socio-economic characteristics	Frequency	Percent
Crowding index:		
<2	78	47.3
2-4	87	52.7
Home:		
Owned	42	25.5
Rent	123	74.5
Income:	31	18.8
Insufficient		
Just sufficient	50	30.3
Sufficient	84	50.9
Have subsidies:		
No	75	45.5
Yes	90	54.5

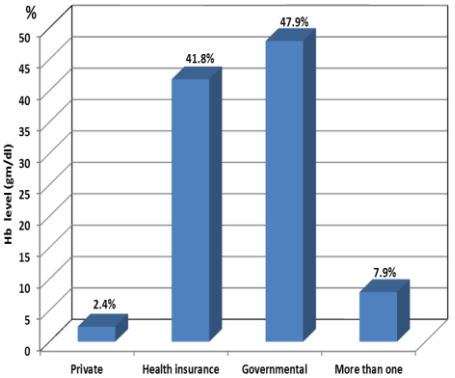

Figure 2: Utilization of health care settings as reported by the elderly in the study sample (No=165).

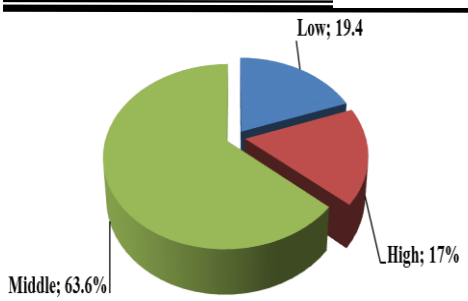

Figure 3: Distribution of elderly in the study sample by socio-economic level (No=165).

Table 3: Quality of Life of elderly in the study sample (No=165)

QoL	Score (max = 5)		
	Range	Mean±SD	Median
Physical	**1.7-3.0**	**2.2±0.3**	**2.08**
Sleep	**1.4-3.6**	**2.0±0.5**	**1.80**
Total physical	**1.6-3.3**	**2.1±0.4**	**1.95**
Psychological	**2.3-3.5**	**2.8±0.2**	**2.78**
Spiritual	**2.1-4.1**	**2.8±0.2**	**2.85**
Social	**2.4-4.0**	**3.2±0.3**	**3.18**
Sexual	**2.8-5.0**	**3.8±0.5**	**4.00**
Total QoL	**2.5-3.2**	**2.8±0.1**	**2.77**

Table 4: Best fitting multiple linear regression model for the physical QoL score

Items	Unstandardized Coefficients		Standardized Coefficients	T-test	P-value	95% Confidence Interval for B	
	B	Std.Error				Lower	Upper
Constant	3.06	0.44		7.044	<0.001	2.21	3.92
Age	-0.01	0.01	-0.20	2.475	0.014	-0.03	0.00
Education	0.02	0.01	0.15	1.929	0.055	0.00	0.04

r-square=0.07
Model ANOVA: F=7.02, P=0.001
The variables entered and excluded: Gender, marital status, income, residence, crowding index, socio-economic level.

Table 5: Best fitting multiple linear regression model for the social QoL score

Items	Unstandardized Coefficients		Standardized Coefficients	T-test	P-value	95% Confidence Interval for B	
	B	Std.Error				Lower	Upper
Constant	3.57	0.12		30.006	>0.001	3.33	3.80
Female gender	0.07	0.04	0.11	1.977	0.050	0.00	0.15
Crowding index	0.16	0.04	0.24	4.322	<0.001	0.09	0.24
Income	-0.20	0.03	-0.45	5.940	<0.001	-0.26	-0.13
Socioeconomic level	-0.01	0.00	-0.21	2.707	0.008	-0.02	0.00

r-square=0.54
Model ANOVA: F=48.72, P<0.001
The variables entered and excluded: Age, education, marital status, residence.

Table 6: Best fitting multiple linear regression model for the sexual QoL score

Items	Unstandardized Coefficients		Standardized Coefficients	T-test	P-value	95% Confidence Interval for B	
	B	Std.Error				Lower	Upper
Constant	1.48	0.57		2.586	0.011	0.35	2.62
Age	0.03	0.01	0.25	3.500	0.001	0.01	0.04
Crowding index	0.17	0.08	0.16	2.157	0.032	0.01	0.33
Income	-0.12	0.05	-0.18	2.397	0.018	-0.22	-0.02

r-square = 0.17
Model ANOVA: F=9.12. P<0.001
The variables entered and excluded: Gender, education, residence, socioeconomic level.

Table 9: Best fitting multiple linear regression model for the total QoL score

Items	Unstandardized Coefficients		Standardized Coefficients	T-test	P-value	95% Confidence Interval for B	
	B	Std.Error				Lower	Upper
Constant	3.08	0.03		98.790	<0.001	3.02	3.14
Education	0.02	0.00	0.37	3.380	0.001	0.01	0.02
Socioeconomic level	-0.02	0.00	-0.93	8.512	<0.001	-0.02	-0.01

r-square = 0.42
Model ANOVA: F=59.36. P=0.001
The variables entered and excluded: Age, gender, marital status, income, residence, crowding index

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