Effect of Smart Phone Addiction on the Quality of Life Among Adolescents at Zagazig University

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ABSTRACT

Background: Smartphones became an integral part of daily lives. Adolescents' extensive and excessive smartphone use poses a major concern. It has been linked to psychological illnesses and possible health risks. Addiction to smartphones can affect adolescents' academic performance, physical health, and quality of life (QOL). **Aim of the study:** Assess the effect of smart phone addiction on the quality of life among adolescents at Zagazig university. **Subjects and methods: Research design:** A descriptive research design was used. **Setting:** The study was conducted at Zagazig university, Egypt. **Subjects**: Five hundred and forty-four students from practical and theoretical colleges were participated by stratified multistage random sampling technique. **Tools of data collection:** Two tools were used in this study, a structured questionnaire (personal & academic data and smartphone addiction scale), and Quality of Life Scale Profile (QOLP-II) questionnaire. **Results:** 57.7% of the students were smart phone addicts and had average level of total quality of life. There were highly statistically significant negative correlations between total students' smart phone addiction and all quality of life domains as public health, family and social life, education and study, emotions, mental health, time management and total quality of life score. **Conclusion:** Smartphone addiction had adverse effects on the adolescents' quality of life**. Recommendations:** Organize and implement training programs to university students to raise their awareness on proper smartphone use, risks of smartphone addiction and its negative effects on the student's quality of life.

Keywords: Adolescents, Quality of life, Smartphone addiction, University students.

Introduction

With their increasing influence on people's daily lives, smartphones are becoming a necessary part of daily routine. These small devices play a pivotal role in people's life and make communication easier by enabling phone calls and message sending and receiving. Such devices are used for a variety of purposes, including social communication, internet and social network access, and learning. They have additionally caused changes in everyday routines and habits, making it possible for people, particularly college students, to access information at any time and from any location. Overuse of

smartphones can significantly alter a person's quality of life **(Demirkan, 2024).**

Adolescence stage is a period of enormous change. These changes are physical, social and emotional, all of which have the possibility to present challenges and obstacles within a young person's life. Adolescence is characterized by biological growth and hormone changes; this period is commonly referred to as puberty. claimed that this stage of development typically spans from 10-24 years old and is complete once there is epiphyseal fusion of long bones. Changes in behavior during adolescence due to the flux of hormonal activity **(Best and Ban, 2021).**

Smartphone addiction means spending time with a smartphone excessively. It is characterized by excessive or compulsive smartphone use that disrupts daily responsibilities and personal relationships and is now recognized as a serious psychological and social challenge especially adolescents, are increasingly dedicating several hours each day to their devices, often indulging in social media, gaming, or other nonessential pursuits. Although smartphones provide convenience and connectivity, their overuse can result in adverse effects on all aspects of everyday lifestyle. Fear of losing the smartphone has been called "nomophobia" **(Snegha and Sudha, 2025).**

The concept of quality of life is multifaceted and encompasses many aspects of people's existence, such as their social connections, psychological state, physical condition, and environmental influences. A person's subjective assessment of their living circumstances in light of the culture and values of their community, as well as how these relate to their objectives, standards, expectations, and needs, is known as their quality of life **(Al-Taie et al., 2020)**.

Adolescence is the most sensitive for all types of addiction and the most hazardous for smartphone addiction. It affects the physical, as in musculoskeletal disorders of the hand, wrist, cervical spine, and back muscles; pain; and fatigue; and mental and psychological problems, such as elevated risk of attention deficit, decreased sleep quality, depression, anxiety, social communication disorder, academic performance and all aspects of quality of life for adolescents due to excessive screen time. Decreased sleep quality can lead to long-term sleep deprivation, which may increase the rate of smoking and alcohol use in adolescents **(Parlak et al., 2023).** The recent rise of these complaints in younger populations deserves attention and further investigation **(Torkamani and Mokhtarinia, 2023)**.

Community health nurses (CHN) play a vital role concerning the issue of smartphone addiction through provide nursing education programs for the best use smartphones for adolescents especially university students. CHN should confirm the right use of these devices for academic purposes, educate individuals about the risks of smartphone addiction, how to promote healthy habits and develop self-regulation skills. CHN should design of psychological and social support programs for students with addictive behaviors can help them manage and reduce their addiction. Collaboration between mental health professionals, educators, and other experts can improve interventions (**González-Vázquez et al., 2024).**

Significance of the study

Widespread and overuse of Smartphone among adolescents is a

serious risk, it has been related to potential health hazards and psychological disorders. A consistent negative association between smartphone addiction and overall quality of life was found across multiple studies. Students who exhibited higher levels of smartphone addiction tended to report poorer overall quality of life **(Awasthi, et al., 2020; Shahrestanaki, 2020; and Demirkan, 2024).** So, special attention of community health nurses may be needed to explore the effect of smartphone addiction on the adolescents' quality of life to has an evidence-based data that can contribute to design programs and interventions mitigate this problem among adolescents especially university students.

Aim of the study

The aim of the study was to assess the effect of smart phone addiction on the quality of life among adolescents at Zagazig university.

Research questions

- What is the prevalence of the smart phone addiction among adolescents?
- What are the levels and aspects of quality of life among adolescents?
- What is the effect of smart phone addiction on the adolescents' quality of life?

Subjects and methods

Research design

A descriptive research design was applied.

Study setting

The study was conducted at Zagazig university at Zagazig University. This Egyptian governmental university is located in Sharkia governorate, eastern region of Nile delta. It is the seventh Egyptian university in terms of the history of its inauguration. It has around 22 colleges categorized into practical (Science, Education, Medicine, Nursing, Pharmacy, etc.) and theoretical (Arts, Commerce, etc.) colleges. The university receives students from the neighboring and distant governorates, and from different countries as well.

Study subjects

The number of students in Zagazig university at grade1 and grade 2 was 75740 students in the academic year 2022–2023. Subjects who participated in this study were enrolled from the two academic years. The study comprised 544that increased to598 students, represented by (10% pilot study 54 students that was excluded) and 544 students represented by152 students from each practical college and 120 from each theoretical college distributed according to the two academic years.

Inclusion criteria

- Age: 18-20 years
- Agree to participate in the study
- Free from any physical and mental disability
- Both genders males and females
- From both theoretical and practical colleges.

Adolescents who have no smartphones were **excluded** from this study.

Sample size

Shahrestanaki et al., (2020) found a significant inverse relationship between smartphone addiction scores and the quality-of-life scores for physical, mental, and social aspects ($p<0.05$). The smartphone addiction score determined 6% of the variance in QOL ($R2 = 0.06$). The number of students in Zagazig university at grade1 and grade 2 were 75740 students. with power of test 80%, and confidence level 95%, the sample size calculated to be 544 students. The required number of

students for each faculties type was calculated with the following formula (number of students in each faculty type /number of students at grade1 and grade 2 in Zagazig university × calculated sample size).

Faculties type	Number of students	Required sample size	Grade	
			Grade 1	Grade 2
Theoretical	**33630**	**240**	**120**	**120**
Practical	**42110**	**304**	**152**	**152**

Sampling technique:

A stratified multistage random sampling technique was used in this study.

Sample technique

Stage 1:(Colleges): were stratified into practical and theoretical. Two colleges were selected randomly from each stratum.

Stage 2:(Years): Each of two practical colleges had four strata representing its two years, total sample of it (304) was divided, ending up with 76 with each group and each of two theoretical colleges had four strata of two years, total sample of it (240) was divided, ending up with 60 each group. This resulted in 8 groups of colleges and years. The total sample (544) was divided.

Stage 3: (Students) Students were selected in each group randomly according to the required inclusion criteria. All eligible students in the randomly selected colleges who accept to participate in the study were included in the study sample till reaching the calculated sample size. The researcher took the students' list of each section from the students' affairs of each college, then the sample selected randomly until cover the required number of sample size. The sampling methodology is presented in the following table:

		Practical		Theoretical	
		Science	Education	Arts	commerce
Years	1	76	76	60	60
	2	76	76	60	60

Tool for data collection

Tool I: A structured questionnaire with two parts was used to collect the data;

Part I: personal and academic data: It entails data asked about: age, sex, residence, family income, exercise practicing, history of chronic disease, relationship with college friends, academic level, study load...etc.

Part II:

Adolescent's smart phone addiction scale: The scale is a reliable and valid measure of addictive use of smartphone, it developed by **Kwon et al. (2013)**. There are 33 items on the scale, which are divided to six domains. These were daily life disturbance (items 1-5), positive anticipation (item 6-13), withdrawal (item 14-19), cyberspace-oriented relationship (item 20-26), overuse (item 27-30) and tolerance (item 31-33).

Scoring system: The responses were on a six-point Likert type scale from "strongly disagree" to "strongly agree," scored from one to six, respectively. Total score 33*6= 198 grades, Addict= 100 -198 grades, and Non addict= 33-99 grades.

Tool II: The Quality of Life Scale: The scale is a reliable and a valid measure of quality of life; developed by **Mansi and Kazem (2006).** The scale consists of 60 items and distributed on the following six domains to measure the quality of: Public health (item 1-10), family and social life (item 11-20), education and study (item 21-30), emotional quality (item 31-40), mental health (item 41-50), and time management (item 51-60).

Scoring system: The responses were on a 5-point Likert type scale "never, little bit, to some extent, a lot, and very much," scored from one to 5, respectively. The scores of the items of each subscale and of the total scale were summed-up. Total score 60*5= 300 grades**,** high > 75% = (225-300 grades), moderate 26% -74% = (78-224 grades), and Low 25% = (60-77 grades).

Content validity and reliability

Once prepared, the tools were revised by a panel of 3 experts from the department of Community Health Nursing, Geriatric Nursing and the Administration Nursing who conducted content validity of all the items of the tool for relevance, clarity, comprehensiveness and understandability.

Alpha Cronbach reliability analysis was used to verify the tools' reliability.

Tools	Alpha Cronbach
Smart phone addiction scale	0.993
Quality of life scale	0.979

Field work

After securing the official approvals for conducting the study, the researcher met with the deans of the selected colleges to explain the aim of the study and the data collection procedure, and to determine the suitable time to collect data. Then, the researcher obtained the schedule of sections and their places in each academic year from student affairs, followed by meeting the academic instructors of the randomly chosen sections. After explaining the purpose of the study, the researcher asked them to randomly select the required number from the students' attendance list.

The selected students were asked to remain in their places after the section ended, the researcher informed the students about the aim of the study and the criteria for inclusion. Those willing to participate were asked to provide a verbally informed consent. The data collection form was handed to recruited students to fill them in. The needed time required to fill out questionnaires for each section ranged from 30 to 45 minutes. In order to address any specific queries that came up when gathering the data, the researcher remained with the students. The researcher checked it for their completeness for 3 days a week, from 11 a.m. to 2 p.m., the researcher visited the chosen colleges. The fieldwork was done within approximately a month and a half, starting from the mid of October 2023 to the end of November 2023.

Pilot study

A pilot study was carried out on a sample of 54 university students (27 students from practical and 27students from theoretical colleges), approximately 10% of the calculated total sample size. The aim was to test the clarity and applicability of the data collection forms and to estimate the time needed for filling them in. The pilot sample was excluded from the main study sample.

Administration and ethical consideration

First, the study proposal was accepted by the Zagazig University Faculty of Nursing's Post Graduate Committee and Research Ethics Committee (REC) with the code of M.D.ZU.NUR/183/13/6/2023.

Letters from postgraduate affairs at faculty of nursing was taken to obtain the agreement of university administration for doing this research on the subjects at colleges of Zagazig University. Then an official permission was obtained by submission of formal letters issued to the deans of colleges, Zagazig University to obtain their permission for data collection. After being fully informed of the study's purpose, participants were given the option to reject participation and were informed that they could leave at any

moment during the data collection interviews. They were also given the assurance that their information would be kept private and used just for research purposes. They were reassured about the anonymity and confidentiality of any obtained information.

Statistical analysis

The statistical analysis of data was done by using the computer software of Microsoft Excel Program and Statistical Package for Social Science (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies and percentage for categorical data, the arithmetic mean (X) and standard deviation (SD) for quantitative data. Correlation coefficient test (r) was used to test the correlation between studied variables. Linear regression model was used to modeling the relationship between smart phone addiction and more explanatory variables.

Results

According to **Table1**, 49.1%of the total students aged 20years, with mean ± SD 19.38 ± 0.679 years and 56.4% of them were female. More than half (58.8%) of them resided in urban areas. Regarding the monthly family income, 51.8% of the students reported that it was just enough. Most of the students (95.4%) had no history of chronic diseases. More than half (56.6%) of them had good relationship with friends at college.65.8% of the studied students didn't practice exercise. Likewise, 47.6% of them had an average academic level and35.9% of them reported that their study load was too much.

Figure 1 shows that 57.7% of the students was smartphone addicts.

Table 2 Shows that the total mean score of smart phone addiction was 124.17± 40.3. Also, the highest mean score 19.77±5.78 was for "Daily life disturbance" domain, while the lowest mean score was 10.34±3.87 was for "Tolerance" domain.

Figure 2 reveals that 57.7% of the studied students had an average level of total quality of life, while only 18.0% of them had good quality of life.

Table 3 shows that the total mean score of quality of life of the students was 148.24 ± 57.1. Also, the highest mean score 28.99±10.59 was for "Family and social life" while the lowest mean score 23.15±9.69 was for "Public health".

Table 4 indicates highly statistically significant negative correlations between total scores of students' smart phone addiction and all domains of quality of life: public health, family and social life, education and study, emotions, mental health, time management and total quality of life scores respectively at (P= < 0.01)

Table 5 reveals highly significant model, as indicated by the F-test result of 94.794 with a p-value of 0.000. This model explained 61.5% of the variation in risk factors affecting the quality of life, with an R-squared value of 0.615. Furthermore, it demonstrated that sex (Male), academic level (Poor), not practicing exercise, history of chronic disease, insufficient monthly family income and smart phone addiction were statistically significant independent positive predictors of poor quality of life with a p-value of <0.01.

Discussion

Adolescents' daily activities have been increasingly impacted by smartphones, which are now an integral part of their daily routine. Particularly for college students, smartphones are essential **(Osorio-Molina et al., 2021).** Despite that, smartphone addiction can lead to negative effects on both mental and physical health, including poor sleep quality, reduced social

interactions, and increased stress levels, and their overall quality of life **(Zhang et al., 2024).**

Concerning the personal characteristics of the current study University students, more than half of the studied students of the current study were female students, with mean age around 20 years. Nearly two-thirds of the students in the research study didn't practice exercise. More than one third of them reported that their study load was too much. Besides, more than half of them belonged to urban areas and more than half reported that their monthly family income was Just enough. These factors would certainly have an impact on smartphone addiction and QOL as will be detailed from the discussion of the study findings.

Addressing the first research question, the present study results indicated that more than half of the students in the study sample were smartphone addict. This might be due to adolescent students are using smartphones more and more to share, download, post, or even create media materials and stay informed about current events around. Having a smartphone is seen as an indication of being up to date with global events. Moreover, due to availability and accessibility to the internet, as well as access to several social media networks. This finding is congruent with a study conducted by **Desouky and Abu-Zaid (2020)** in Saudi Arabia who reported that more than half of the students in their study was smartphone addict. In the same vein with foregoing study results, by **Dhamija et al. (2021)** in India whom study emphasized that more than half of the participants demonstrated smartphone addiction.

Regarding the smartphone addiction domains, the present study result indicated that the highest mean score was for daily life disturbance domain, while the lowest mean score was for tolerance domain. This might be due to the fact that daily life disturbance reflects the most immediate and noticeable impact of smartphone addiction on individuals' daily routines, making it more easily perceived by the students. Likewise, a study carried out in Malaysia by **Rathakrishnan et al. (2021)** had shown that daily life disturbance recorded the highest scores, suggesting students' daily lives were significantly impacted by their smartphone use. Also, **Petrucco and Agostini (2023)** in Italy affirmed that smartphone addiction significantly had an effect on students' daily lives, leading to issues like sleep disturbances, decreased academic performance, and reduced social interactions. On the other hand, a study conducted by **Ou-Yang et al. (2023)** in China found higher scores for tolerance, suggested that, over time, users exhibited a growing dependency on their smartphones, requiring prolonged use to meet their emotional or psychological needs. This discrepancy might be attributed to cultural and contextual differences between both study subjects, which could influence how smartphone addiction manifests.

Addressing the second research question, the current study demonstrated that more than half of the studied students had average level of total QOL, while less than one fifth of them had good QOL. This might be due to the high prevalence of smartphone addiction among more than half of the students which likely have a negative impact on both mental and physical health and their overall QOL, as their daily routines and well-being might be compromised. This finding is supported

by **Demirkan (2024)** in Iran whose study reported that the largest proportion of the students had average level of total QOL. In this regard, **Shahrestanakiet al. (2020)** who carried out a study in Turkey and declared that the majority of students fall within the average range of QOL. Consistently, **Buctotet al. (2023)** in **Philippin** who found that most of the studied students reported moderate QOL. Conversely, a study in Germany by **Kliesener et al. (2022)** reported low QOL total scores among the studied respondents. These discrepancies among studies might be attributed to differences in the characteristics of both study subjects and different tools of data collection.

Concerning the domains of Quality of life, the current study results represented that the highest mean of total quality of life was for family and social life, while the lowest mean was for public health. This finding might be contributed to the fact that smartphone addiction is disrupting personal relationships and social interactions. Conversely, students might not fully realize the long-term impacts of smart phone addiction on their health despite immediate signs of diminished well-being. In this regard, a study in Filipin conducted by **Buctot et al. (2020)** stated that the students reported relatively high QOL scores in social domains. On the other hand, **Kumcagiz (2019)** in Turkey whose study noticed that physical and psychosocial domains had the greatest mean scores for quality of life among the studied students. Also, **Shahrestanaki et al. (2020)** found in an Iranian study that had a lowest mean score of quality-of-life domains was for social domain. These discrepancies might be attributed to varying levels of smartphone penetration and public health education that may influence students' perceptions and prioritization of quality-of-life aspects, contributing to the observed differences in study outcomes.

Addressing the third research question, the present study highlighted that there was a highly statistically significant negative correlation between total students' smart phone addiction toward the quality of life domains: public health, family and social life, education and study, emotions, mental health, time management and total QOL score. Also, smart phone addiction was statistically significant powerful indicators of low quality of life among the students under study.

This might be due to the fact that excessive smartphone use can lead to various detrimental effects on an individual's overall well-being. For adolescents, constant smartphone use may interfere with essential aspects of life such as mental health, emotional regulation, social interactions, and academic performance. The distraction and overuse associated with smartphones can disrupt time management, strain relationships with family and peers, and contribute to poor quality of life.

Similarly, a study carried out by **Machado de Oliveira et al. (2023)** in Brazil who highlighted the negative impact of smartphone addiction on adolescents' mental health, which in turn affects their QOL. Correspondingly, **Kamal et al. (2024**) in Egypt demonstrated that overuse of smartphones had been linked to sleep disturbances, anxiety, reduced face-to-face interactions and reduced overall satisfaction**.** This finding is in harmony with **Kamal et al. (2024)** in Egypt whose study found that smartphone addict group had significantly lower

mean scores on all domains of QOL score compared to non- smartphone addict group. Also, **Karimy et al. (2020)** in Iran who reported that there was a significant negative correlation between smartphone addiction and QOL. Another similar study by **Machado de Oliveira et al. (2023)** in Brazil who found that smartphone addiction was negatively associated with all aspects of QOL. On the other hand, a study conducted by **Park and Choi (2022)** in South Korea who reported that no significant relation between smartphone overdependence and QOL. This discrepancy might be attributed to different culture or different characteristics of both study samples.

Conclusion

In light of the study's findings and answers of research questions, it was concluded that, smart phone addiction was prevalent among adolescents, and had adverse effects on the adolescents' quality of life, especially their public health, family and social life, education, emotions, mental health, time management and total QOL.

Recommendations

Based on findings, the study recommended that:

- Health education programs involved adolescents that address the best use of smartphone device, and appropriate approaches of QOL enhancement.
- Further research to study the risk factors can cause smartphone addiction among adolescents and affecting their QOL enhancement
- Replicate the study on a large scale and in other settings to permit for generalization of results.

Authors' contributions

S.R.M. suggested the research concept, drafted the proposal, performed data collection and analysis, and drafted the manuscript. S.A.A., M.M.A., and L.E.Z. contributed to the study by revising and assisting in developing the research methodology, data analysis and interpretation, discussion, comparison of results with recent literatures in the study field, writing, editing and summarizing of the manuscript. All parts in the thesis have been revised and approved by all authors.

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Table (1): Frequency distribution of the studied students according to their sociodemographic and academic data(n=544)

Characteristics	No.	%
Age (year)		
18	61	11.2
19	216	39.7
20	267	49.1
Mean ± SD	**19.38±0.679**	
Gender		
Male	237	43.6
Female	307	56.4
Residence		
Urban	320	58.8
Rural	224	41.2
Monthly family income		
Enough and saving	189	34.8
Just enough	282	51.8
Not enough and borrowing	73	13.4
Do any exercise		
Yes	186	34.2
No	358	65.8
History of chronic disease		
Yes	25	4.6
No	519	95.4
Study load		
Too much	195	35.9
Normal	183	33.6
Little	166	30.5
Relationship with friends at college		
Good	308	56.6
Normal	186	34.2
Bad	50	9.2
Academic level		
Excellent	188	34.6
Average	259	47.6
Poor	97	17.8

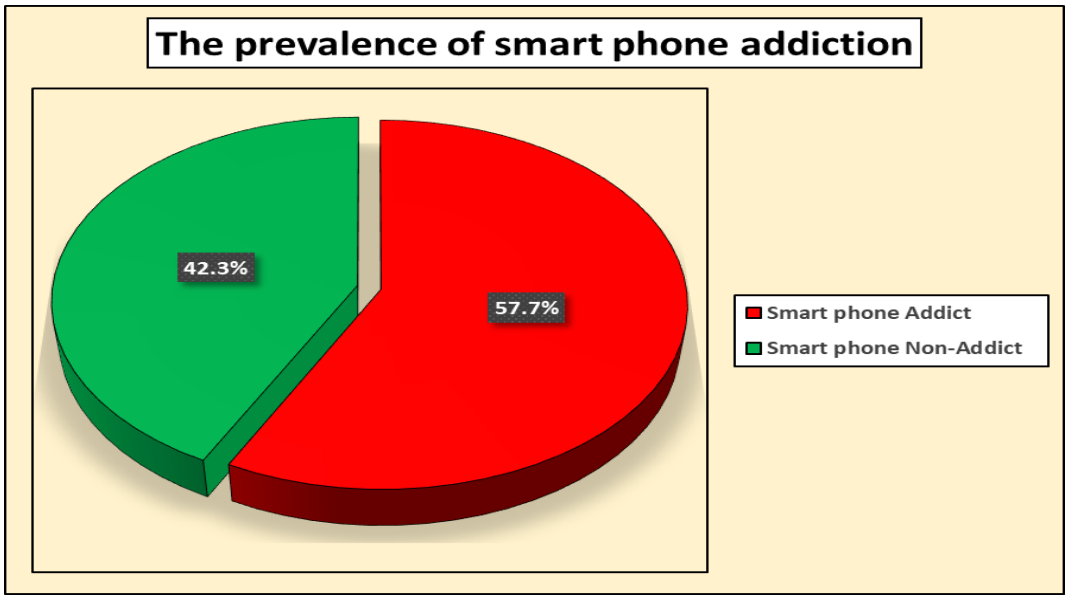

Figure (1): Prevalence of smartphones addiction among the studied students at Zagazig university (n=544).

Table (2): Mean and standard deviation of smart phone addiction domains as perceived by the studied students(n=544).

Domains	Min	Max	Mean ± SD	Score%	Ranking
Daily life disturbance	9	30	19.77±5.78	65.9%	1
Positive anticipation	8	48	30.61±10.44	63.8%	4
Withdrawal	7	35	21.21±7.25	58.9%	5
Cyberspace oriented relationship	8	41	26.84±9.20	63.9%	3
Overuse	6	24	15.37±5.30	64.0%	2
Tolerance	3	18	10.34±3.87	57.4%	6
Total smart phone addiction	49	191	124.17±40.3		

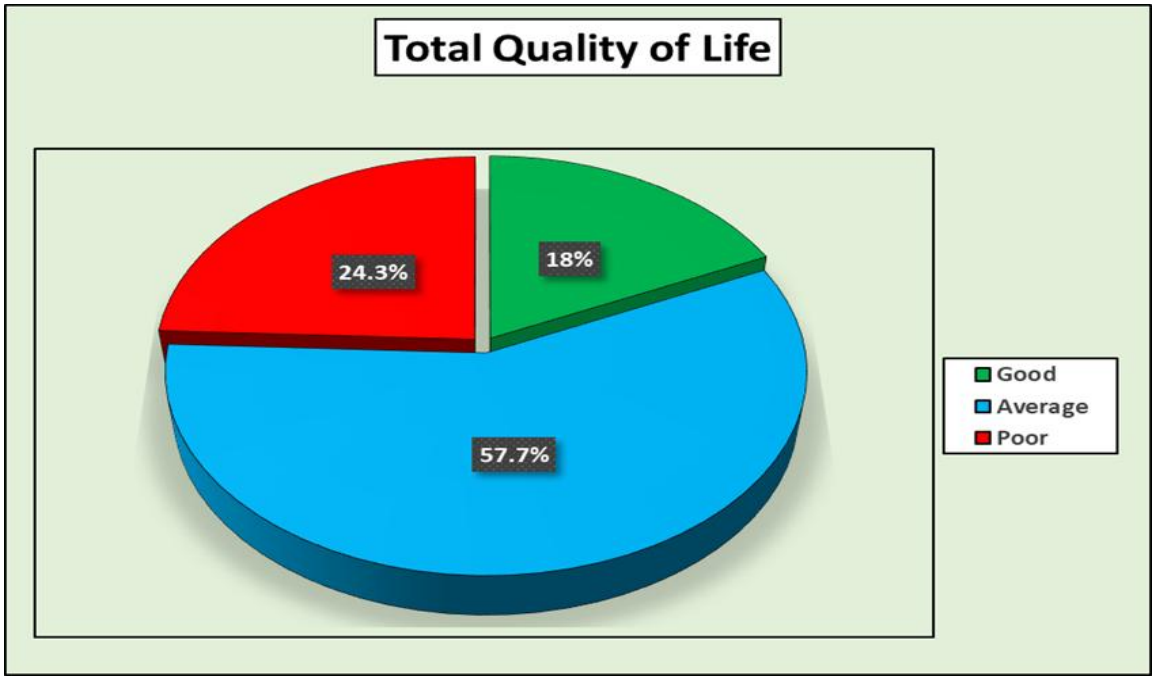

Figure (2): The studied students' percentage distribution of in relation to total quality of life score (n=544).

Table (3): Mean and standard deviation of quality of life domains as perceived by the studied students(n=544).

Domains	Min	Max	Mean ± SD	Ranking
Public health	10	39	23.15±9.69	6
Family and social life	10	46	28.99±10.59	1
Education and study	10	45	23.19±9.60	5
Emotions (affective aspect)	13	41	23.67±9.01	4
Mental health	10	48	24.74±11.97	2
Time management	10	45	24.48±9.98	3
Total quality of life	67	256	148.24±57.1	

SD: Standard deviation

Table (4): Correlation between total smart phone addiction and total quality of life domains among the studied students (n=544).

Variables	Total smart phone addiction score	
	R	p-value
Public health	-0.578-	0.000**
Family and social life	-0.654-	0.000**
Education and study	-0.590-	0.000**
Emotions (affective aspect)	-0.657-	0.0000**
Mental health	-0.642-	0.000**
Time management	-0.657-	0.000**
Total quality of life score	-0.677-	0.000**

r= Pearson correlation coefficient test. **highly statistically significant at p ‹ 0.01.

Table (5): Multiple linear regression analysis for prediction of risk factors affecting the quality of life.

Items	Unstandardized Coefficients		Standardized Coefficients	t	P. value	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
Constant	366.656	46.158		7.943	0.000**	275.982	457.330
Age	-3.198-	2.339	-.038-	-1.367-	0.172	-7.793-	1.397
Sex (Male)	-15.243-	3.527	-.132-	-4.322-	0.000**	-8.315	-22.170
Academic level (Poor)	-27.511-	2.709	-.339-	-10.157-	0.000**	-32.832-	-22.190-
Residence (Rural)	-4.707-	3.658	-.041-	-1.287-	0.199	-11.894-	2.479
Practice exercise (No)	-14.739-	5.114	-.122-	-2.882-	0.004**	-24.784-	-4.694-
History of chronic disease	-31.414-	7.988	-.115-	-3.933-	0.000**	-47.106-	-15.723-
Monthly family income (Not enough and borrowing)	-17.252-	2.834	-.199-	-6.088-	0.000**	22.818-	-11.685-
Smart phone addiction	-43.724-	5.739	-.378-	-7.619-	0.000**	-54.998-	-32.450-

Model Summary			
Model	R	R Square	Adjusted R Square
1	0.784	0.615	0.609
ANOVA			
Model	df	F	P. value
Regression	9	94.794	0.000**

Dependent Variable: Total quality of life score.

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