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Health related Quality of Life and its Association with Academic Performance: A Study Among University Going Adolescents

[1] Mubasher Muhammad Kamran*, [2] Izzat Gul and [3] Zarnish Hussain

1. Lecturer, School of Sociology, Minhaj University Lahore, Punjab, Pakistan
2. Visiting Lecturer, Department of Sociology & Criminology, University of Sargodha, Punjab, Pakistan
3. Lecturer, Department of Sociology & Gender Studies, University of Home Economics, Lahore Punjab, Pakistan

| *Corresponding Author: | Mubasher.soc@mul.edu.pk |

ABSTRACT

This study aimed to evaluate the health-related quality of life (HRQL) of university students and investigate its relationship to their academic performance. A society's ability to prosper is hampered by the lethargy of its youth. The physical and mental health of young people are crucial for their academic performance and overall achievement. Resultantly, their achievements determine their society's progress. Consequently, academic experts, researchers, and policymakers must address the emerging challenges faced by university students to develop more effective intervention strategies. The study employed a random sampling technique to select participants from a randomly chosen university. The widely used SF-36 questionnaire, supplemented with an additional question, was administered to assess HRQL and academic performance. The findings revealed that the majority of students in the selected university demonstrated high overall HRQL. Overall, students reported favorable physical and mental health, with physical health scores slightly higher than mental health scores. When examining the eight specific HRQL domains, respondents scored highly in four domains: emotional well-being, vitality, pain, and general health. However, scores in the remaining four domains were lower. Notably, statistical analysis did not reveal any significant association between academic performance and HRQL. There is a need for further investigations with the use of diverse methodological approaches in varying cultural, spatial and temporal dimensions for further and clearer explanation of the relationship between HRQL and academic performance.

Introduction

In the recent decenniums, Health related quality of life (HRQL) has emerged as a key concept in public health. It is considered to be an indicator of health status (Wong et al., 2011). It is a sub domain of the broader concept of Quality of life (Tajvar, Arab and Montazeri, 2008) which is a multidimensional concept that was frequently used after the Second World War to encompass every aspect of life which could affect overall wellbeing of an individual or a group (Campbell, 1981). It was not later than mid 1980s when the components of Quality of life measurement emerged in health status instruments. That development gave birth to a new concept of Health related quality of life which emerged to cover only health specific aspects of QoL (Armstrong, Lilford, Ogden, and Wessely, 2007).

HRQL is usually perceived as a multidimensional and subjective concept which refers to the mental, physical and social wellbeing of an individual Hass, 1999).Its final

scores include Mental Component Score (MCS) and Physical Component Score (PCS) which are measured from its eight different dimensions including physical functioning (PF), role limitation due to physical health (RLPH), role limitation due to emotional problems (RLEP), energy/ fatigue (EF), emotional well-being (EW), social functioning (SF), pain (P) and general health (GH). Leading organizations consider it to be a goal for every person from any stage of life (Zullig, 2010: People, 2011 and WHO, 2007) as its assessment in general population can produce valid and useful outcomes (Gullar et al., 2005: Ware and Gandek, 1998: Montazeri, Goshtasebi, Vahdaninia, Gandek, 2005: Gracia et al., 2003 and Stadnyk, Calder and Rockwood, 1998).

Previous researches have revealed that HRQL of a person can be affected by numerous factors. Socio demographic and socio economic factors including level of education, marital status, neighborhood, employment status and economic crisis are associated with HRQL (Schmidt, 2012: Fallahzadeh and Mirzaei, 2012 and Zarvas et al., 2012). Gender and age also contribute to the differences in HRQL of different individuals as women and older people have demonstrated poorer HRQL as compared to men in many investigations (Gullar et al., 2005: Zarvas et al., 2012: Aghamolaei, Sadat, Tavafian, and Zare, 2012: Borglin, Jakobsson, Edberg, Hallberg, 2005 and Rouhani and Zoleikani, 2013). Several studies (Gullar et al., 2005: (Canbaz, Sunter, Dabak, Peksen, 2003: Wilson and Cleary, 1995) have shown that higher morbidity and higher mortality are associated with worse HRQL which in turn causes greater use of health care services. Such associations demonstrate the need and importance of HRQL research in general population. Its assessment was started by medical researchers among the patients. Later on, researchers started using HRQL questionnaires among general population in order to assess their health statuses (Leow, 2013: Garratt and Stavem, 2017) as their reliability and validity to be used among general population are well documented (Ware and Sherbourne, 1992: Zhang et al., 2012: Qu et al., 2009)

University students represent a larger population of young adults of a society (27) that is why importance of assessing HRQL in youth has increased among researchers and policy makers (Schmidt, 2012: Fallahzadeh and Mirzaei, 2012: Bakar, 2012: Tumkaya, 2011: Zullig, Teoli and Ward, 2011: Chen and Storr, 2011: Sabbah et al., 2013). University students face sudden mental, physical and social changes when they start their university lives in an entirely new environment. That new environment is characterized by increased workload and stress (Pullman, 2009). University students face different kind of stress factors including academic pressure, social issues and financial problems (Kouzma and Kennedy, 2004: Mikolajczyk, 2008: Von, Ebert, Ngamvitroj, Park and Kang, 2005) which (stress) in turn affects their HRQL negatively (Bhandari, 2012). Their HRQL can be seriously affected by the presence of certain problems including depression, chronic diseases, chronic pain and anxiety (Klemenc et al., 2011). Mental problems that they are prone to develop during their university days can affect their overall quality of life (Mikolajczyk, 2008: Niemi, Vainiomaki, 1999: Stewart et al., 2000: Sahreef et al., 2015) which in turn affects their academic achievements in terms of their obtained scores (42).

Development of a society depends largely on the development and well-being of its youth (Mike and Uzochukwu, 2015). Pakistan has 2nd largest youth population in the world as 60% of its population is made up of youth (Mahar, 2014). A vast number of youngster's studies in universities (Pakistan Education Statistics, 2016). Current situation of research on health status of youth in the country is not up to the mark (Shaikh, 2015). As per researchers' knowledge, no research has been conducted in the country in order to assess the HRQL of university students.

A lot of studies (Shareef, 2015: Florence MD, Asbridge M, Veugelers, 2008: Stea and Torstviet, 2014: Shahwan, Hourani, Lezzar, Raed and Mohamed, 2016) have been conducted in other countries that have associated academic performance with several relevant factors including health status, healthy life style habits and quality of life but there is a huge gap in what we know about any association between dimensions of HRQL and academic performance. The aim of the present study is to fill that gap by 1) assessing HRQL of university students in Pakistani context and by 2) finding out how HRQL and its different dimensions can predict (Or is associated with) students' academic performance.

Literature Review

In the recent decades, HRQL is considered to be a key causal factor of health status. Recently, a lot of research work has been done in this area. A person's HRQL depends upon a healthy life style along with several other factors including socio economic status, family background in terms of education, age, gender, area and country etc. It was concluded by Ziglio, Currie, and Rasmussen in a cross-national investigation from 35 countries during 2001 and 2002.

Healthy lifestyles depend on the adoption of healthy lifestyle behavior habits during early days of life. Unhealthy and sedentary lifestyle behaviors among youngsters are associated with poor health related habits in adulthood. It was reported by Landsberg, Danielzik, Lange, Johannsen, Seiberl and Muller (2008). Poor health related behaviors during initial phases of life affect the risks of disease occurrence in coming days of life. Although it is not easy to change poor health related habits that adolescents adopt during their university days, a lot consequences of health risking circumstances among adolescents can be avoided if these circumstances are investigated and changed at the early period of their life. Therefore, it is very important to promote healthy habits among university students (Gall, Jamrozik, Blizzard, Dwyer and Venn, 2009).

Another common and serious problem among university students is laziness due to sedentary lifestyle. They have so severe pressure of work that much of their time and energy is used for studies. On the contrary, common use of information technology especially the use of computers and internet has provided them with more entertainment choices which in turn have reduced their interest in exercise. Another reason for lack of participation is lack of exercise facilities. Female students have overall better health profile. They are more likely to They exhibit better nutrition behavior and health responsibility than their male counter parts. The show better health responsibility and are more confident than male students in the dimension of social support. Male students were more frequent in exercising and were better in stress management than female students but they are more likely to engage in risky health behavior than their female counterpart. Healthy lifestyles are affected by age, father's level of education, grade, gender and type of institution (Wang, Xing and Wu, 2013).

Above mentioned studies highlighted the importance of early adoption of healthy life style habits in determining the health related quality of life in the future days of life. Healthy life style practices reduce risk of diseases and mortality rates. Healthy lifestyle behaviors are among the cornerstones of self-management during several diseases. Although the extent to which healthy lifestyle factors can possibly prevent early mortality among people with specific diseases remains unknown, healthy lifestyle practices are still recommended by health care experts as the best possible solution for the prevention of diseases (Nothlings, Ford, Kroger and Boeing, 2010; Hu, Liu and Willet, 2011; Reddy, Rankins, Timoshanko and Dunbar, 2011).

Healthy life style is important but most of the university students show poor lifestyle behaviors. They exhibit risky health behavior such as tobacco use, substance abuse, alcohol consumption, low physical activities and poor diet. They have low scores on health related quality o life scales. Their psychosocial well being is affected by the way in which they adopt their life styles. Environment in the campus also plays an important role in determining their life style habits that has direct correlation with their health promoting habits and attitude and mental well being. It was reported in a cross-sectional study by Lee and Loke (2005). The aim of the study was to explore the behaviors that were positive in health promotion and mental well being of university students.

A cross sectional study in the biggest public sector institution in Lebanon conducted by Sabbah, Sabbah, Khamis, Sabbah and Droubi in 2013 identified transitional social, emotional, mental and physical changes among young adults at the start their university lives. According to the researchers university experiences provide young adults a chance to learn new things. That experience has an important role in the coming days of young adults' lives. Most of the life style behaviors they adopt during their stay at university are likely to become permanent in their future. This study also focused on health promoting actions and interventions in university to direct the students towards positive lifestyle habits.

Researchers in the previous studies have shown correlation between HRQL and socio-demographic variables such as sex, age, area of residence, parental qualification, socio-economic status etc. Some of such previous investigations are reviewed below.

Socio-demographic variables such as gender, marital status, age, paid employment and socio economic status correlate with healthy lifestyle behavior. Age, sex, socio economic status, marital status and paid employment are as important as healthy life style behaviors are in determining HRQL. All these factors directly influence healthy life style and indirectly affect the HRQL of people. Krueger and Chang (2008) studied that how individuals from different socio-economic background could deal with perceive stress through involvement in unhealthy but pleasurable habits like smoking and drinking alcohol. Researchers concluded that combination of high levels of stress and high levels of former physical inactivity or smoking is especially harmful among people from low socio-economic status. Unhealthy behaviors, stress and low socio-economic status together increase risk of death (Krueger and Chang 2008).

Diez and Fortis (2009) found that socio-demographic mentioned by Krueger and Chang (2008) correlate with the life style behaviors. That cross-sectional descriptive study analyzed the extent to which newcomers in university exhibit healthy behaviors. That study also aimed to analyze the strength of relationship between socio-demographic factors and healthy or unhealthy behaviors. Researchers identified the exhibition of unhealthy behavior among majority of freshmen. Another conclusion that was drawn from that research work was the effect of maternal education on the health behavior of the youngsters.

University students from low socio-economic strata of society exhibit harmful behavior that risks their health. They are more likely to exhibit such behavior than students from high-socioeconomic strata. Significant association between socioeconomic status and unhealthy habits such as physical inactivity, tobacco consumption and poor food choices have been demonstrated in a study conducted by Fred, Patrick and Justin (2010). Poor lifestyle habits such as poor food, lack of exercise and use of tobacco contribute to differences in the indicators of general health and mortality rate among

groups of different socioeconomic statuses. Low-socioeconomic status groups were found engaged in poor life style choices. Inability to afford health life style choices was also pointed out.

A cross-sectional study conducted by Schmidt (2012) was similar to the works of Diez and Fortis (2009) and Fred, Patrick and Justin (2010). In that research, the main aim was to examine the influence of socio-demographic indicators on life style behaviors and self-rated health. Researcher found the certain life style behaviors along with self-rated health could be predicted by certain socio-demographic indicators including mother tongue, gender and parental education.

Meade and Dowswell (2016) conducted a three-year longitudinal study to find out differences in "health-related quality of life" of university students over an extended period of time. Researchers found change in various scales of HRQL during a time span of three years. Gender differences were prominent and were significant across three dimensions including mental wellbeing, physical wellbeing and energy (vitality) among females who reported lower HRQL scores than males. The scores of females declined during the time span of three years across two domains of HRQL which include social support and school environment. That indicated reductions in their health-related quality of life over time.

Materials and Methods

The current study is a quantitative investigation. It is cross sectional in nature. University students aged between 18 and 24 from Lahore city were the target population for the current research. Sample size was decided with the use of Taro Yamane formula. Multi-stage sampling technique was employed. University of Management and Technology, main campus was selected randomly from HEC's website. At the second stage, 5 faculties from total faculties of the university were randomly selected. At the third stage, departments were then selected at random from the total departments in each faculty. Each selected department was offering the varying number of BS programs. One session of BS program was then randomly selected from the each selected department. At the final stage, students of the selected sessions were further selected through systematic random sampling technique. Each selected class had 50 to 60 enrollments. Data was obtained from 393 respondents which was predetermined through the application of a statistical formula.

Tool of data collection

Well established tool SF-36 (Developed by RAND organization) was used to assess the health status of the students in the present research. An additional question was included in the questionnaire to assess the academic performance of the students. Academic performance was assessed from the Cumulative Grade Point Average (CGPA) of the students. The tool assessed respondents' self-rated health with two summary components which included both mental and physical aspects of a person's health. The scores produced through this tool assess the health status with respect to previous 4 weeks of a respondent's life. Two summary components of SF-36 had 4 further summary dimensions each. A list of GPA of all the respondents was obtained from the concerned departments with the formal approval in order to fill question from the Section 3 of the questionnaire.

Pilot Testing

As one question was included in the questionnaire in order to assess the academic performance, pilot testing was organized to address the questions related to the reliability of the tool. Pilot testing was organized and data was obtained from 25 students of the same university a few weeks before the actual data collection. The words "Pep" and "Vitality" were not understood by a few respondents therefore these words were replaced by the words "High spirit" and "Energy".

Conceptualization of concepts

Health-Related Quality of Life

HRQL is a multifaceted construct that refers to the subjective examination of person's physical and mental wellbeing.

Academic Performance

In the current study, academic achievement has been conceptualized as "a student's academic performance which in turn can be examined through academic scores (Chen, 2007)".

Operationalization

Health Related Quality of Life

HRQL is a multi-dimensional concept that is measured with the variety of scales that are can be both, disease specific or generic. HRQL in the present studies focused on the subjective examination of respondents' subjective perception of their well-being and health status with the use of a generic instrument that has two summary domains including physical health and mental health.

Academic Performance

Academic performance in the present studies was operationalized in terms of Cumulative Grade Point Average (CGPA).

Analysis of Data

Data analysis was performed using SPSS, a well-known software application for the statistical analysis of data. Descriptive statistics were used to develop the description of the target population. Numerical calculations, graphs and tables were used for descriptive purposes. Inferential statistics was used to make predictions and inferences on the basis of the data that was obtained from the target population.

Descriptive statistics

Descriptive statistics uses the data to provide descriptions of the population, either through numerical calculations or graphs or tables. Descriptive statistics of the present research are given below.

Table 1
Descriptive statistics of demographic variables

Gender

	f
Male	241
Female	153
Area	
	f
Rural	126
Urban	267

Table 2 below is showing general scores of all eight dimensions of health related quality of life which include physical functioning, general health, limitation of role due to physical health, vitality, pain, social functioning, emotional wellbeing and limitation of role due to emotional problems with the scores of mean and standard deviation. Descriptive statistics of two summary themes including physical health and mental health are also presented with the standard deviation and mean of overall HRQL.

Table 2
Means and Standard Deviation

	Mean	Std. Deviation
Overall HRQL	55.38	13.12
Physical Health	56.53	14.12
General health	57.49	16.12
Physical functioning	52.49	23.83
Pain	71.41	24.31
Limitation of role physical functioning	43.65	30.88
Mental Health	54.23	16.25
Energy / Fatigue	57.12	18.68
Limitation of role due to Emotion problem	47.21	32.16
Emotional Well Being	57.10	17.94
Social Function	55.49	23.11

Highest average score out of all eight domains of HRQL was 71.41 with standard deviation 24.31 which was measured for the sub-theme "Pain" which is a component of "Physical health". Among other measures of "Physical health", mean for "General health" was recorded 57.49 with the standard deviation of 16.12 while mean for "Physical functioning" was measured at 52.49 with the standard deviation of 23.83. Lowest mean value among components of "Physical health" was measured for "Limitation of role due to physical functioning" (at 43.65 at standard deviation 30.88). Mean for the second major theme "Physical health" was 56.44 with the standard deviation was 14.12. Among four indicators of the theme "Mental health", maximum mean score 57.12 along with the standard deviation of 18.70 was measured for sub category "Energy" or "Vitality". Mean score for "Emotional wellbeing" was measured at 57.12 with the standard deviation of 17.94. Mean value and standard deviation for "Social functioning" was measured at 55.49 and 23.11 respectively. Lowest mean score in summary component "Physical health" was observed at 47.21 with standard deviation of 34.16 for the sub domain "Limitation of role due to emotional problems". Overall mean score for one among the two categories "Mental health" was 54.23 with the standard deviation of 16.25. Mean score for the main concept "Health-related quality of life" was recorded at 55.38 with standard deviation of 13.12. Graphical representation of values of mean and standard deviation is given in the Figure 1.

Overall scores

Frequencies above 50.0 % were declared "High" whereas frequencies lower than 50.0 % were declared "Low".

Table 3
Overall Scores

	High	Low
	%	%
General health	62.4	37.6
Physical functioning	45.8	54.2
Limitation of role due to physical health	26.4	73.6
Pain	83.6	16.4
Energy	57.0	43.0
Limitation of role due to emotion problems	47.0	53.0
Emotional wellbeing	59.7	40.3
Social function	45.4	54.6
Physical health	63.6	36.4
Mental health	58.2	41.8
Overall HRQL	65.0	35.0

Table 3 is demonstrating the scores in terms of "Low" and "High". 65 % of respondents demonstrated overall higher HRQL scores on the scale of measurement. 35.0 % reported "Low" scores on the same scale. Better scores were reported for "Physical health" (at 63.6 %) than scores on the "Mental health" (at 58.2 %) between the two summary components of HRQL. Among eight themes of health related quality of life, questions about pain got positive response "High" from 83.6 % of the respondents. 62.4 % among the students reported higher in the "General health" section. 59.7 % reported higher scores in the section "Emotional wellbeing". Higher score was reported for vitality "Energy/Fatigue" by 57.0% of the total respondents. Lowest score was reported for the category "Limitation of role due to physical health" as only 26.4 % of the students reported "High" in it. 45.8 % of the respondents reported low in their "Physical functioning". Score for "Social functioning" was considered low as 45.4 % of respondents reported "High" for that section. 47.0% reported higher score for "Limitation of role due to emotional problems".

Academic Performance

Academic performance of students was measured through their CGPA. Lists of their CGPA was obtained from their departments. The obtained scores were defined in three categories namely "Low", "Medium" and "High". Scores of 56% respondents were reported to medium which means CGPA between 2.7 and 3.3. 30.7 % of the respondents reported higher CGPA OF 3.3 or more while only 13.3 % of the respondents reported low CGPA.

Table 4
Grade Point Average

Performance	%
Low (Less than 2.7/4.0)	13.3
Medium (Between 2.7 and 3.3/4.0)	56.0
High (More than 3.3/4.0)	30.7

Inferential Statistics

Statistical inferences and predictions about a larger population can be drawn from a smaller sample of data using inferential statistics. This method was employed in the current study to assess the validity of the research hypotheses, which were:

Research Hypothesis

H1: There is an association between HRQL and academic achievement of university going youngsters.

Ho: There is no association between HRQL and academic achievement of university going youngsters.

The outcomes of the statistical tests are presented and interpreted in the subsequent section. Pearson correlation and linear regression techniques were utilized with statistical software to determine the validity of the null and alternative hypotheses.

Pearson Correlation

Pearson's correlation coefficient was used to assess the strength and direction of the relationship between academic performance and various aspects of health-related quality of life (HRQL), including overall HRQL, physical health, mental health, and eight specific HRQL domains. The results of the Pearson correlation analysis revealed that academic achievement did not exhibit a statistically significant correlation with overall HRQL or with the two summary domains of physical health and mental health. However, academic achievement was found to be negatively correlated with three specific HRQL domains: limitation of role due to physical health ($r = -0.161$, $p > 0.05$), vitality ($r = -0.200$, $p > 0.05$), and social functioning ($r = -0.167$, $p > 0.05$).

These findings suggest that higher academic achievement may be associated with a lower risk of experiencing limitations in physical functioning, reduced vitality, and impaired social functioning.

Table 5
Correlation of CGPA with other variables

	R	P value
HRQL	-.106	.197
Physical health	-.085	.300
Mental health	-.095	.248
Physical functioning	.044	.594
Limitation in role due to physical health	-.161*	.050
Limitation in role due to emotional problems	.094	.253
Vitality	-.200*	.014
Emotional wellbeing	-.098	.234
Social functioning	-.167*	.041
Pain	-.065	.426
General health	.056	.497

Academic performance was not found to be significantly associated with overall health-related quality of life (HRQL) or with two broad domains of physical health and mental health. Additionally, there was no significant correlation between academic performance and several specific HRQL domains, including physical functioning,

limitation of role due to emotional problems, emotional well-being, pain, and general health.

However, academic performance did show a negative correlation with three specific HRQL domains: limitation of role due to physical health (r = -0.161, p < 0.05), vitality (r = -0.200, p < 0.05), and social functioning (r = -0.167, p < 0.05). These findings suggest that higher academic achievement may be associated with a lower risk of experiencing limitations in physical functioning, reduced vitality, and impaired social functioning.

Regression analysis

Regression analysis was employed to examine the potential relationship between health-related quality of life (HRQL) and CGPA. The adjusted R-squared value of 0.005 indicated that the model explained a very small proportion of the variance in HRQL. Further analysis of the model summary, ANOVA table, and coefficients revealed no statistically significant association between HRQL and CGPA. These findings suggest that HRQL is not a significant predictor of academic performance.

Table 6
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.069a	.005	-.002	.643

a. Predictors: (Constant), HRQL

To determine the proportion of variance in health-related quality of life (HRQL) explained by CGPA, the adjusted R-squared value was multiplied by 100, as per standard practice. The resulting value of -2 indicated that HRQL has no explanatory power for CGPA. This suggests that HRQL does not contribute to any meaningful variation in CGPA.

Table 7
ANOVA

	Model	Sum of Squares	Df	Mean Square	F	Sig.
	Regression	.297	1	.297	.717	.398
1	Residual	61.197	148	.413		
	Total	61.493	149			

a. Dependent Variable: Academic Achievement

b. Predictors: (Constant), HRQL

The ANOVA table revealed that the p-value was greater than 0.05, indicating that the independent variable HRQL did not have a statistically significant relationship with the dependent variable academic achievement. The results of the ANOVA analysis were $F (1, 148) = 0.297$, p = 0.398.

Table 8
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	2.329	.191		12.174	.000

| HRQL | -.094 | .111 | -.069 | -.847 | .398 |

Dependent Variable: Academic achievement

The results of the standardized and unstandardized coefficients model revealed that there was no statistically significant relationship between HRQL and academic achievement. This conclusion is supported by the p-value for the t-statistic, which was 0.398, greater than the standard alpha level of 0.05. This indicates that the null hypothesis should be accepted, meaning that there is not enough evidence to suggest a significant association between HRQL and academic achievement.

Discussion

The current study revealed that the majority of respondents (66.0%) reported good overall health-related quality of life (HRQL), contrasting with the findings of Megahed (2014). Conversely, 34.0% of university students displayed poor overall HRQL scores. Out of two summary components of HRQL, the physical health score (64.7%) of university students was better than their mental health score (59.3%). Despite this, 74.7% of respondents reported limitations in role-playing due to their physical health. These findings regarding physical health differ from those of Lins et al. (2015). A substantial number of youngsters (61.3%) reported good general health, while the prevalence of pain among respondents was also very low. The findings of the present study regarding general health and physical functioning contrast with the results of Fallahzadeh (2012). Overall, these results indicate that the HRQL of the majority of students is good. These statistics also suggest that the physical health of university students is satisfactory.

Emotional wellbeing" emerged as the highest-scoring component of mental health in this study, with 60.7% of respondents reporting high levels of emotional well-being. This indicates that the majority of participants had a positive emotional state. The scores for "Vitality" were also high (58.0%), aligning with Bhandari's (2012) findings on "Vitality." However, 48.0% of respondents reported limitations in their roles due to emotional problems, mirroring Bhandari's (2012) findings. Notably, only 47.3% of respondents indicated high levels of "Social functioning," suggesting that social functioning was not a strength for a significant portion of the sample. Overall, "Mental health" was considered good for 59.3% of the respondents, contrasting with the findings of Lins et al. (2015).

The current study uncovered no correlation between academic performance and health-related quality of life (HRQL). Academic achievement demonstrated no association with physical and mental health or any of the eight HRQL domains. This contrasts with the findings of Fallahzadeh (2012). Regression analysis further revealed no dependency between academic achievement and HRQL. This differs from the findings of Megahed (2014) and Latas (2014). Gender-related results align with those of Fallahzadeh's (2012) study.

The data revealed that scores in two domains of physical health, "Physical functioning" and "Role limitation due to physical health," were low. Low scores were also recorded in two domains of mental health, "Role limitation due to emotional problems" and "Social functioning." These lower scores across all eight domains contributed to a reduced "Overall HRQL" score. These domains represent crucial aspects of an individual's life and warrant further attention from researchers, policymakers, and health promotion program developers. Although respondents demonstrated positive scores in "General health," "Pain," "Vitality," and "Emotional wellbeing," there remains ample room and justification for improvement in these domains as well. While the

overall HRQL was satisfactory, the 34.0% of respondents reporting low HRQL underscores the need for further enhancement.

The current study diverged from Fallahzadeh's (2012) findings, which demonstrated a link between academic achievement and HRQL. This discrepancy highlights the need for further research to thoroughly explore the relationship between academic achievement and HRQL. These findings underscore the importance of considering these factors in future research and intervention programs.

Conclusion

A study conducted among university adolescents found that young students reported overall good health-related quality of life (HRQL). Interestingly, the study found no association between HRQL and academic achievement.

Recommendations

Larger-scale research studies are warranted to delve into the potential association and relationship between health-related quality of life (HRQL) and academic achievement. This in-depth exploration will pave the way for developing a comprehensive understanding of the factors influencing HRQL among university students. Alongside this research endeavor, the implementation of a university-level health promotion program is strongly recommended. Such a program would serve as a catalyst for enhancing students' health-related knowledge and fostering positive behavioral changes. By equipping students with the necessary tools and resources to manage their well-being, this program could effectively contribute to improved HRQL outcomes. In conclusion, further research and the implementation of a health promotion program are crucial steps towards elucidating the relationship between HRQL and academic achievement. These initiatives hold the potential to significantly enhance the overall well-being of university students, enabling them to thrive both academically and personally.

References

Aghamolaei, T. E. Y. M. O. U. R., Tavafian, S. S., & Zare, S. (2011). Determinants of health related quality of life on people living in Bandar Abbas, Iran. *Iranian journal of public health, 40*(3), 128.

Armstrong, D., Lilford, R., Ogden, J. and Wessely, S. (2007). Health-related quality of life and the transformation of symptoms. *Sociology of Health and Illness, 29*, 570–583.

Bakar, A.A. (2012). Health-related quality of life among youth: Evaluating measurement model fit. *International Journal of Social Science and Humanity, 2*, 282-285.

Bhandari, P. (2012). Stress and health related quality of life of Nepalese students studying in South Korea: a cross sectional study. *Health and Quality of Life Outcomes, 10*(1), 26.

Borglin, G., Jakobsson, U., Edberg, A. K., & Hallberg, I. R. (2005). Self-reported health complaints and their prediction of overall and health-related quality of life among elderly people. *International journal of nursing studies, 42*(2), 147-158.

Campbell A (1981). *The Sense of Well-Being in America*. New York: McGraw-Hill.

Canbaz, S., SÜNTER, A. T., Dabak, S., & PEKŞEN, Y. (2003). The prevalence of chronic diseases and quality of life in elderly people in Samsun. *Turkish Journal of Medical Sciences, 33*(5), 335-340.

Chen, C. Y., & Storr, C. L. (2006). Alcohol use and health-related quality of life among youth in Taiwan. *Journal of Adolescent Health, 39*(5), 752-e9.

E. Leslie, N. Owen, J. Salmon, A. Bauman, J. F. Sallis, and S. K. Lo. (1999). Insufficiently active Australian college students: perceived personal, social, and environmental influences. *Preventive Medicine, 28*(1), 20–27

Fallahzadeh H, Mirzaei H. (2012). Health related quality of life and associated factors among Iranian university students. *Journal of Community Health Research, 1*:122-130.

Florence MD, Asbridge M, Veugelers PJ. (2008). Diet quality and academic performance. *Journal of School Health. 78* (4), 209-15

Garratt, A. M., & Stavem, K. (2017). Measurement properties and normative data for the Norwegian SF-36: results from a general population survey. *Health and quality of life outcomes, 15*(1), 51.

Guallar, Sendino, Banegas, Lopez, Rodriguez. (2005). Differences in quality of life between women and men in the older population in Spain. *Social Science & Medicine, 60*: 1229-40.

Haas, B. K. (1999). A multidisciplinary concept analysis of quality of life. *Western journal of nursing research, 21*(6), 728-742.

Klemenc-Ketis, Z., Kersnik, J., Eder, K., & Colarič, D. (2011). Factors associated with health-related quality of life among university students. *Srpski arhiv za celokupno lekarstvo, 139*(3-4), 197-202.

Kouzma NM, Kennedy GA. (2004). Self-reported sources of stress in senior high school students. *Psychological Reports, 94*, 314-6.

Leow, M. K. S., Griva, K., Choo, R., Wee, H. L., Thumboo, J., Tai, E. S., & Newman, S. (2013). Determinants of health-related quality of life (HRQL) in the multiethnic Singapore population–a National Cohort Study. *PloS one, 8*(6). 171-177

Lopez-Garcia E, Banegas JR, Graciani Perez- Regdera A, Gutierrez-Fisac JL, Alonso J, Rodriguez- Artalejo F (2003). Population-based reference values for the Spanish version of the SF-36 Health Survey in the elderly. *Medicine Clinic, 120* (15), 568-573.

Mahar, A. (2014). *Pakistan's Youth Bulge: Human Resource Development (HRD) Challenges*. Review of islamabad policy research institute Lecture

Mikolajczyk RT, Brzoska P, Maier C, Ottova V, Meier S, Dudziak U, et al. (2008). Factors associated with self-rated health status in university students: a cross-sectional study in three European countries. *BMC Public Health, 8*, 215.

Montazeri A, Goshtasebi A, Vahdaninia M, Gandek B (2005). The Short Form Health Survey (SF-36): translation and validation study of the Iranian version. *Quality of Research, 14*, 875-82.

Niemi PM, Vainiomaki PT. (1999). Medical students' academic distress, coping and achievement strategies during the pre-clinical years. *Teaching and Learning in Medicine, 11*, 125-34.

Pakistan Education Statistics (2015-16) by Nemis-Aepam (AEPAM Publication No. 278) 1. Education Indicators 2. Education Statistics – Pakistan

Pullman et al., (2009). Effect of the transition from high school to university on anthropometric and lifestyle variables in males. *Applied Physiology, Nutrition and Metabolism, 34*(2), 162–171.

Qu, B., Guo, H. Q., Liu, J., Zhang, Y., & Sun, G. (2009). Reliability and validity testing of the SF-36 questionnaire for the evaluation of the quality of life of Chinese urban construction workers. *Journal of International Medical Research, 37*(4), 1184-1190.

Rouhani S, Zoleikani P. (2013). Socioeconomic status and quality of life in elderly people in rural area of Sari-Iran. *Life Science Journal, 10*(2), 173-180.

Sabbah, I., Sabbah, H., Khamis, R., Sabbah, S. & Droubi, N. (2013). Health related quality of life of university students in Lebanon: Lifestyles behaviors and socio-demographic predictors, *Health, 5*(7), 1-12. doi: 10.4236/health.2013.57A4001

Schmidt M. (2012). Predictors of self-rated health and lifestyle behaviors in Swedish university students. *Global Journal of Health Sciences, 4* (4), 1-14.

Shahwan*, Hourani, Lezzar, Raed and Mohamed. (2016). Health related quality of life and academic performance among Ajman university of science and technology students. *European Journal of pharmaceutical and medical research, 12*(8), 461-468.

Shaikh, B. T. (2015). Health systems research in Pakistan: issues, challenges and way forward. *Journal of Ayub Medical College Abbottabad, 27*(2), 257-258.

Shareef. (2015). The interplay between academic performance and quality of life among preclinical students. *BMC Medical Education 15*(1), 193 https:// DOI 10.1186/s12909-015-0476-1

Shareef, Al Amodi, Al-Khateeb, Abudan, Alkhani, Zebian, Qannita and Tabrizi. (2015). The interplay between academic performance and quality of life among preclinical students. *BMC Medical Education, 15*, 193

Stadnyk K, Calder J, Rockwood K. (1998). Testing the measurement properties of the short form-36 health survey in a frail elderly population. *Journal of Clinical Epidemiology, 51*(10), 827-35.s

Stea TH, Torstveit MK. (2014). Association of lifestyle habits and academic achievement in Norwegian adolescents: a cross-sectional study. *BMC Public Health 11*(14), 829

Stewart-Brown, S., Evans, J., Patterson, J., Petersen, S., Doll, H., Balding, J., & Regis, D. (2000). The health of students in institutes of higher education: an important and neglected public health problem? *Journal of Public Health, 22*(4), 492-499.

Tajvar M, Arab M, Montazeri A (2008). Determinants of health-related quality of life in elderly in Tehran, *Iran. BMC Public Health, 8*, 323-330

Tümkaya, S. (2011). Humor styles and socio-demographic variables as predictors of subjective well-being of Turkish university students. *Education and Science, 36*, 158-170.

Von Ah D, Ebert S, Ngamvitroj A, Park N, Kang DH. (2005). Predictors of health behaviours in college students. *The Journal of Advanced Nursing, 50*, 111.

Ware Jr, J. E., & Gandek, B. (1998). Overview of the SF-36 health survey and the international quality of life assessment (IQOLA) project. *Journal of clinical epidemiology, 51*(11), 903-912.

Ware Jr, J. E., & Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. *Medical care, 41*(10), 473-483.

Wilson IB, Cleary PD (1995). Linking clinical variables with health related quality of life. A conceptual model of patient outcomes. *JAMA, 273*(1), 59-65.

Wong, J. B., Coates, P. M., Russell, R. M., Dwyer, J. T., Schuttinga, J. A., Bowman, B. A., & Peterson, S. A. (2011). Economic analysis of nutrition interventions for chronic disease prevention: methods, research, and policy. *Nutrition reviews, 69*(9), 533-549.

World Health Organization. (2007). International Classification of Functioning, Disability, and Health: Children & Youth Version: ICF-CY. World Health Organization.

Zavras, D., Tsiantou, V., Pavi, E., Mylona, K., & Kyriopoulos, J. (2013). Impact of economic crisis and other demographic and socio-economic factors on self-rated health in Greece. *The European Journal of Public Health, 23*(2), 206-210.

Zhang, Y., Bo, Q. U., Lun, S. S., Guo, Y., & Liu, J. (2012). The 36-item short form health survey: reliability and validity in Chinese medical students. *International journal of medical sciences, 9*(7), 521.

Zullig, K. J. (2010). Creating and using the CDC HRQOL healthy days index with fixed option survey responses. *Quality of Life Research, 19*, 413-424.

Zullig, K. J., Teoli, D. A., & Ward, R. M. (2011). Not all developmental assets are related to positive health outcomes in college students. *Health and Quality of Life Outcomes, 9*, 1-10.