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RESEARCH ARTICLE

Nutritional and psychological interfaces in enhancing the quality of life

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Abstract: Nutrition is an important determinant of one's brain performance and ultimately the mental health. Similarly, the pattern of one's eating behaviour defines one's health. Unhealthy eating patterns from childhood can lead to physical, psychological, and behavioural problems in later stages of life. In this context, the purpose of this research is to study the eating behaviour patterns of young adults, the association between eating patterns and the quality of life, and the differences in mental health conditions determined by demographic factors like age and gender. The research was conducted in Rawalpindi and Islamabad in Pakistan, under a quantitative research design, that used a questionnaire with close-ended questions to assess the individual respondents' eating patterns and their quality of life. The responses of (385 respondents) were collected online through a survey link, shared on multiple platforms. The findings indicate that the eating patterns like low-fat eating, meal skipping, emotional eating, snacking and sweet, haphazard planning and cultural lifestyle. do have an impact on one's physical and psychological health. It was also deduced that males have relatively better physical and psychological health as compared to females. The study concludes that healthy eating among young adults will lead to a better quality of life. Hence this study promotes awareness of healthy eating patterns among the younger generation because healthy eating behaviours when initiated from the childhood will lead to a high quality of life ahead.

Keywords: Eating pattern, healthy eating, quality of life, physical health, psychological health.

INTRODUCTION

Nutritional psychology comprehensively focuses on how disciplined intake of nutrient-rich food can alter one's mood, stress, energy, sleep, tolerance, and behaviour (Centre for Nutritional Psychology, 2021). It establishes a link between mind and body and focuses on what we choose to eat, how we eat, and its effect on one's health. Eating not only affects one's body and mind, rather it has a huge influence on one's mood and impacts psychologically, and in return, helps one make one's dietary choices (Institute for the Psychology of Eating, 2020). Studies show that the eating pattern is associated with a brain-rewarding system of body hormone regulation. Delicious food not only enhances one's mood in emotional terms but also helps the brain centre release dopamine which is a neurotransmitter as well as a hormone to elevate one's psychosomatic condition in biochemical terms (Gahagan, 2012).

In a healthy eating pyramid, daily exercises, weight control, and supplementary intakes are placed at the bottom because they are considered indispensable for a healthy lifestyle. It is followed by vegetables, fruits, and wholegrain along with other dairy and poultry products as well as nuts, beans, and seeds. The top of the pyramid is made up of meat and butter along with grains, pasta, rice, sugar, *etc*., which shows that intake of these items should be kept small and occasional (The Nutrition Source, 2021).

Unfortunately, people's lifes have drastically changed today, and so have their food patterns. This shift in the trend from healthy to the unhealthy can be attributed to numerous developments, including the technological advancements like the use of social media

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as well as interpersonal and social influences (Chung *et al*., 2020). People have now got less time and more work to do to keep up with their surroundings. They prefer the modern trends of fast foods or junk foods over traditional, vegetable, or homemade foods (Yahya *et al*., 2013). Most people's food choices depend on the amount of time they have (Lappalainen *et al*., 1997). Modern foods are preferred by the young generation because it takes less time to be prepare, to be delivered, and more gastronomically appealing. Studies show that these unhealthy and poor dietary conditions lead to non-communicable diseases like obesity, cardiovascular diseases and diabetes. (Anand *et al*., 2015). High in calories and sugar and low of nutritional value, they also contribute to different diseases that emerge in the later stages of life.

Similarly, the quality of life and the quality of the diet are also interlinked (Gezer *et al*., 2021). Eating unhealthy foods regularly can be hazardous, in terms of damaging the body physically, causing obesity (Junk Food, 2021), harming the mind and body equilibrium, and affecting the whole lifestyle. People eventually lose interest in physical activities like walking or running, and everything else. Regarding the children, their academic performance gets affected due to the lack of concentration. All the above negative psychosomatic imbalances are resulted in by unhealthy eating patterns (SA Health, 2021).

Hence the present research aims to study different eating behaviour patterns, and their relationship with the desired quality of life, along with their results in relation to the demographic differences that prevail among young adults.

LITERATURE REVIEW

Along with the trends that develop in the course of time, people's lifes are affected by many cataclysmic social and environmental factors. Among the many factors that cause physical as well as psychological diseases, one's dietary pattern figures prominent (Heidari *et al*., 2019). Many studies help to establish a link between the nutritional and psychological aspects of life and to realise that the improvement towards a healthy eating pattern will eventually enhance the quality of life (Amarantos *et al*., 2001). However, the root cause of many diseases is traced back to lifestyle and eating patterns during childhood and adulthood, respectively. Similarly, with time as the norms and patterns change, that also leads to changes in diet, and people become either obese or underweight or develop certain behavioural issues (Kumcağız, 2017).

Diets in the Asian and Pacific region have changed drastically due to modernisation and globalisation, leading to a high rate of obesity and overweight (Pingali, 2021). Consumption of fruits and vegetables remains low in many regions and while intake of highly processed foods, white rice, staple carbohydrates, *etc*. has risen drastically over the years. Similarly, processed food sales have also rapidly increased in middle-income countries as these fast-food chains are rapidly penetrating markets and attracting people's attention (Baker & Friel, 2016). the second largest industry of Pakistan, the food and beverage, accounts for 27% of the value-added food processing production with an annual average of $223.5 million (Invest, 2021). This diversification has led to an over-access to animal and vegetable fat oils. Foods cooked in these oils highly linked to the heart diseases as well as contribute about 15% of the calories in consumers in the countries like Pakistan, China, Malaysia, the Republic of Korea and Fiji. In Pakistan, there is a high prevalence of heart diseases due to the consumption of diets high in fat oils containing 14.2% -34.3% of trans fatty acids (TFA) (Iqbal, 2014). Likewise, the consumption of sugar has also increased across the region which again negatively impacts health (Hills *et al*., 2018).

Unhealthy eating behaviour patterns like meal skipping, snacking, and high intake of sugar cause mental health problems and emotional disorders, problems of conduct, hyperactivity disorder, and emotional disorders (Howard *et al*., 2010, Lien *et al*., 2006). Meal skipping, specifically, the first meal of the day that is breakfast is always later followed by excessive intake of junk food that is extremely unhealthy (Khalid *et al*., 2018). There exists a positive relationship between mental health problems, dietary intake, and the quality of life. Similarly, studies show that high-fat food intake for one week also causes impaired learning, memory issues, and alteration in dopamine levels in different parts of the brain (Farhangi *et al*., 2018). Furthermore, the children who are involved in physical activities reportedly are healthy with normal body mass indexes compared to those who with poor quality of life including a lesser amount of physical activity (Anokye *et al*., 2012). Eating vegetables and nuts is also associated with a positive and healthy body mass index (Gutierrez-Pliego *et al*., 2016). Those who prefer fast foods over healthy foods are found to be obese with larger body weight (Fernando *et al*., 2019). The average age for the onset of anxiety and mood disorders among children is 6 to 13 years, and therefore, special attention to the diet of the children can lead to better mental health in the later stages of their life (O'Neil *et al*., 2014). Likewise, food choices and food priorities play an equally important role. Preferring snacks, frozen foods, contaminated drinks, and chocolate,

candies and animal food (red meat, processed meat) over traditional food (vegetables, oatmeal) can cause an onset of psychological problems (Errisuriz *et al*., 2016). High intake of a diet rich with sugar like sweets and fizzy drinks are also linked to behavioural problems among the adolescents (Oellingrath *et al*., 2013) whereas consuming traditional foods is less associated with such issues (Weng *et al*., 2011). Indeed, food intake is a complex process influenced by many factors like availability, cost, variety, taste, *etc*. that affect one's combined physical and mental health (Singh, 2014). Furthermore, diet can also affect academic performance. A decline in the nutritious rich diet of the Mediterranean style and an increased intake of a saturated fat diet delays cognitive development and functioning in children (Barchitta *et al*., 2019). Ares *et al*. (2015) highlight another aspect of the perception of well-being in the context of food habits and how that can impact one's food choices. Some of the major dimensions of physical and psychological health get along with food, environment, society, economics, *etc*. Consumers do acknowledge that food does affect their well-being through their physical and mental health. They have the knowledge that foods high in salt, fat, sugar, sweet products, junk foods, and fried foods are harmful and hazardoust to health.

Low fat eating comprises foods with a calory level of 30% or less than that. These include vegetables, fruits, whole grains, beans, lentils, chicken, & other dairy products. Such a diet has been approved and endorsed by many clinicians as it reduces the mortality rate and promotes the healthy lifestyles (Bhandari & Sapra, 2021). A low fat diet reduces the rate of coronary heart disease along with cancer as well (Jéquier & Bray, 2002). Foods like vegetables, fruits, whole grain, meat, and protein are more nutritious and essential needs of one's mind, body, and well-being. They have also been associated with a lower risk of depression and related disorders (Sutter Health, 2021). Similarly, emotional eating has increased food consumption in response to either positive or negative emotions, both can be harmful if done excessively (Bongers & Jansen, 2016). Skipping meals, another important effective component, also has a great impact on energy levels. Skipping breakfast or lunch or dinner is often followed by an increased intake of food, a low level of energy and a negative impact on health (Zeballos & Todd, 2020). So, to improve the mental health at the primary level, a good healthy diet should be prioritised and maintained (Meegan *et al*., 2017). World Health Organization (WHO) developed a global strategy on diet, physical activity and health, that focuses on improving the population's diet, environment, and policymaking by the government to control the widespread of such diseases. They advise educating people through public service messages about the relationship between a healthy, unhealthy diet, and its effect on the mental and physical health. Even the slightest change and improvement in our diet pattern can contribute towards the betterment of our society (Jacka *et al*., 2014).

The number of studies investigating the association between the quality of life and eating patterns is very limited. Health-related quality of life is a combination of physical health, psychological health, social relationship, and environment (Gil-Lacruz *et al*., 2021). A recent study involving a group of Brazilian students shows that an unhealthy diet reduces the quality of life (Lanuza *et al*., 2020). In Pakistan, specifically, no such research has been carried out previously to study the relationship between food patterns and the quality of life. Hence, the current study aims to examine this relationship specifically among the young adults to better understand the food preference's along with their impact on physical and psychological health. It also focuses on the differences based on the demographics such as gender and socio-economic status that have not been previously targeted.

Hypotheses

Upon reviewing the literature, the current study was formulated the following hypotheses:

- H1: There is a relationship between the eating behaviour patterns and the quality of life among young adults.
- H2: Males have better physical health compared to females.
- H3: Males have better psychological health compared to females
- H4: There is a positive effect of one's family income on one's eating patterns and the quality of life.

Objectives of the study

The current study is designed,

- to study the eating behaviour pattern of the young adults.
- to study the relationship between the quality of life and eating behaviour patterns among young adults.
- to study the variations in the relation between the quality of life and eating behaviour patterns based on demographics (age, gender, socioeconomic status)

Methodology

Participants and procedure

Under the principles of a cross-sectional study, using a quantitative research method, the data was collected from the cities of Rawalpindi and Islamabad. A non-probability sampling method was used combined with purposive and convenient sampling techniques due to the proximity and easy accessibility of the data within the research venue. The collected data was then analysed through a statistical package pertaining to social sciences (SPSS). The target population involves both the male and female young adults of the age range from 18 to 35 years. Under Raosoft, the sample size is found to be 385 participants.

Due to the COVID-19 pandemic, the data was collected online by sharing a link to a designed questionnaire on different social media platforms relevant to the inclusion criteria. The target sample of 385 participants was achieved in two months, starting from 2nd June 2020 to 2nd August 2020. The participants were informed about the nature of the study and obtained the informed consent.

Measures

Demographic sheet

The purpose is to obtain more detailed information about the participants. The demographic sheet includes cues to age, gender, marital status, working status, family income, education, university, height, and weight.

The two instruments used along with a demographic sheet:

Eating Behaviour Pattern Questionnaire (EBPQ)

The eating behaviour pattern of participants is assessed through EBPQ scale developed by David G. Schlundt which consists of 51 items. The questionnaire comprises 6 factors assessing low-fat eating (14 items) along with, emotional eating (10 items), snacking and sweets (6 items), cultural/lifestyle behaviours (7 items), haphazard planning (9 items), and meal skipping behaviour (5 items). The 51-item Likert-type questionnaire with a total of 5 questions of reverse scoring is adopted as it does not require any changes. Its Cronbach alpha value calculation result is considered .86.

Some sample questions appear as:

1. I count fat grams.
2. eat when I'm upset.
3. My emotions affect what and how much I eat.

World Health Organization Quality of Life (WHOQOL-BREF)

To assess the quality of life, a scale developed by the World Health Organization was used. It comprises a total of 26 questions under the 4 domains: physical health (7 items), psychological health (6 items), social relationship (3 items), and environment (8 items). The remaining two questions; questions number one and two are examined individually, not under any domain because they focus on the overall health and quality of life of the subject. The scoring of the Likert scale-based questionnaire was calculated to receive a Cronbach alpha value of .90.

Some sample questions appear as:

1. How much do you enjoy life?
2. Are you satisfied with your sleep?
3. Do you have enough energy for everyday life?

Procedure

Unfortunately, due to the ongoing COVID-19 pandemic situation data could not be collected by visiting the subjects in person. Hence, the online survey link was shared multiple times on different social media platforms as well as among friends and family. Standardised and valid questionnaires were converted to create a Google form and then the link was shared among different people, personal contacts, and social media sites to be filled. It was made clear that their participation was considered voluntary and the confidentiality of the responses was ensured.

Initially, a pilot study was conducted with 30 participants to ensure the reliability of the questionnaires and the eligibility of the participants. After establishing reliability, the final data collection (with a sample of 385) was carried out over a period of 2 months.

RESULTS

Table 1 illustrates the correlation between the age and the subscales EBPQ and QOL to test the first hypothesis. It was found that there is a significantly positive correlation between snacking and sweet, cultural lifestyle, haphazard planning, meal skipping, psychological health, and environment whereas there exists a negative correlation between the physical health and emotional eating.

As shown inTable 2, there is a significant effect of family income on both the eating behaviour pattern F (2, 382) = 3.70 and the quality of life F (2, 382) = 8.87, p < .05. This shows that these groups have significantly different means and approves the hypothesis on the effect of income on both the eating pattern and the quality of life.

On an average, the male participants have better physical health (22.05 ± 4.14) compared to the female ones (21.01 ± 3.9). The difference is found to be significant, i.e., t (383) = 2.006, p < .05. Similarly, the male participants also have a better level of psychological health (20.12 ± 3.63) compared to the female ones (19.13 ± 3.75). The difference is found to be significant, i.e., t (383) = 2.056, p < .05. This helps accept the second hypothesis that aims to see the mean difference between gender and the physical and psychological health.

As shown in table 4, there is a significant relationship between the low fat eating and the quality of life,

Table 1: Pearson's correlation of age, eating behaviour pattern and quality of life (N = 385)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Age	-										
2. Low-fat eating	.08	-									
3.Emotional Eating	-.08	-.06	-								
4.Snacking & Sweet	-.09	.00	.61**	-							
5. Cultural & lifestyle Beh	.04	.26**	.42**	.43**	-						
6.Haphazard Planning	-.11*	.03	.50**	.52**	.42**	-					
7.Meal Skipping	-.06	.18**	.36**	.34**	.22**	.42**	-				
8.Physical Health	.17**	.13*	-.11*	-.01	.03	-.08	-.10*	-			
9.Psychological health	.18**	.16**	-.10*	-.00	.12*	-.05	-.06	.64**	-		
10.Social Relationship	.16**	.14**	-.07	.01	.04	-.11*	-.03	.45**	.47**	-	
11.Enviroment	.19**	.06	.04	.09	.05	-.04	-.04	.58**	.59**	.50**	-

*Note: **Correlation is significant at p < .01. *Correlation is significant at p < .05.*

Table 2: One way Anova test between eating behaviour pattern, quality of life and family income (N = 385)

	Less than 50,000 PKR		50,000- 100,000 PKR		More than 100,000 PKR			
Variable	M	SD	M	SD	M	SD	F(2,382)	η2
EBPQ	146.7	18.1	150.9	19.8	154.3	23.0	3.70*	0.019
QOL	81.6	12.3	83.2	12.7	88.8	14.2	8.87*	0.04

*Note: *p < .05*

*Table 3:*Mean, standard deviation and t-test of gender differences for physical and psychological health (N = 385)

	Male		Female		t	p	Cohen's d
	Mean	SD	Mean	SD	2.006	0.046	0.257
Physical health	22.05	4.17	21.01	3.9	2.006	0.046	0.257
Psychological health	20.12	3.63	19.13	3.75	2.056	0.040	0.268

Df = 383, p < 0.05

Table 4: Multiple regression analysis for quality of life (N = 385)

	B	SE B	β	R^2	ΔR^2	P
Step 1						
Constant	72.843	3.829		.023	023	.000
Low fat eating	.287	.095	.152*			.003
Step 2						
Constant	73.834	4.948		.044	.021	.000
Low fat eating	.317	.101	.168			.002*
Cultural lifestyle Beh	.134	.183	.043			.465**
Meal Skipping	-.523	.190	-.150			.006*
Snacking & sweet	.195	.167	.069			.241**

Note: *p < .05, **p > .05

F (1, 383) = 9.020, p < .05 for step 1 and for step 2 F (4, 380) = 4.417, p < .05. With 1 standard deviation increase in low-fat eating, there is a significant increase in the quality of life by .152 units. Similarly, 1 standard deviation increase in cultural lifestyle, there is an increase in quality of life by .043 units. However, 1 standard deviation increase in meal kipping significantly decreases the quality of life by -.150 units and 1 standard deviation increase in snacking and sweets also increase the quality of life by .069 units. From the magnitude of the t statistic, only low-fat eating and meal skipping are the significant predictors of the quality of life and has more impact compared to the others.

DISCUSSION

The sample of 385 participants composed of both males and females within the age range of 18 to 35 years reported their demographics and answered questions on their dietary patterns and quality of life.

The first objective of the study was achieved through a bivariate analysis to study the relationship between the variables (Table 1), which revealed that low-fat eating is positively and significantly related to the physical and psychological health, similarly there exists a significant relationship between meal skipping and emotional eating that lead to more addiction to snacking and intake of sweets that have adverse effects on the physical and psychological health, establishing the fact that there exists a negative correlation between physical health and emotional eating. Similar results were reported through a study conducted in Iran with a group of female adolescents, which concluded that high intake of snacks and sweets, emotional eating, high fat intake, and meal skipping are the positive predictors of psychological problems like emotional disorders. These unhealthy eating patterns and the decline in health can further lead to a decline in mental health causing depression and anxiety along with attention deficit disorder (Farhangi *et al*., 2018). Hence the first hypothesis confirms that there exists a relationship between the eating patterns and quality of life. An additional analysis further supports the hypothesis that there is a significant negative relationship between the meal skipping and quality of life, which means that skipping meals from time to time can affect the social, physical, and psychological health. However, low-fat eating is positively related to the quality of life, and eating vegetables and fruits along with low-fat foods will eventually impact the life and health positively.

The study findings also reveal social relationships, cultural lifestyle, and environment to be significantly and positively correlated. There are multiple social environmental and personal factors that explain the external influences on the eating pattern. The social cognitive theory (SCT) is one of the models that argue that self-efficacy along with observational learning and reinforcement can shape one's cognition. Similarly, the ecological model states social and environmental connections can be influential in food culture. The surrounding environment shapes and maintains the human behaviour but this relationship is inverse, which means that people can also alternatively change and create their behaviours through the environment. Individual influences like beliefs, attitudes, and

lifestyle behaviours along with the availability of and easy access to various foods are determinant factors of various eating behaviours. Besides these, the social factors like friends, family, peers, and acquaintances also impact the food choices. These preferences are formed through multiple complex interactions that an individual makes in their environment. Therefore, self-realisation and social change along with exposure and proper education are required in one's onward march towards a healthy diet and a better quality of life (Story *et al*., 2002). Good nutrition improves the quality of life by promoting health, preventing dietary deficiency diseases and secondary malnutrition that can be caused by or associated with other diseases. Such a nutritive dietary pattern includes a high intake of legumes, seafood, whole grain, and vegetables, a low intake of meat and processed food, sweets, *etc*. and has been suggested to be related to positive health benefits (Vajdi & Farhangi, 2020).

Family income is another important predictor of high quality of life and healthy eating patterns (Table 2). Low socioeconomic status and low-income family can inhibit access to a healthy diet. Similarly, high income is a positive predictor of a high-quality diet often leading to unhealthy patterns due to overly access to an unhealthy diet. However, malnutrition is also prevailing in lower socio-economic classes due to a lack of income and an increased risk of poor diet quality (Shariff *et al*., 2015). Studies show that there exists a strong association between family income and the nutritional quality of the foods being purchased. Food purchase data shows that people from lower socio-economic status purchase less healthy foods, including fewer fruits and vegetables and more sugary beverages compared to those of higher economic status. Hence specific food assistance programmes need to be initiated among the target groups to educate them and promote healthy foods with a focus on leading them towards a healthy diet and high-quality lifestyle (French *et al*., 2019).

There is also a significant difference between the male and female perceptions of the quality of life. Results indicate males have greater and better physical as well as psychological health compared to females, which proves another hypothesis. A study at Kuwait university identifies gender-specific dietary patterns, which show males consuming a protein-rich diet, compared to females who are more inclined towards potato chips and fatty salty foods. Females also tend to show higher dietary restraint levels than men which in turn damages their minds and body (Alkazemi, 2018). Men, however, have more time for leisure activities and intensive physical activities which keeps them physically fit compared to women. (Azevedo *et al*., 2007).

Hence the findings fulfil the aims and objectives that there exist in the relationship between the eating behaviour patterns and the quality of life. Unhealthy eating patterns influence the quality of life. However as explained above, human beings tend to formulate certain behaviours under various influences or exposures as well as recognise and change them if they are educated about the timely developments.

CONCLUSION

Nutrition is an extremely important and readily modifiable factor for disease prevention (Govindaraju *et al*., 2018). Multiple factors can affect the quality of life of a person, one such being one's dietary pattern. The present study is an effort that specifically focuses on studying eating behaviour patterns among young adults and their relationship with health and the overall quality of life. It is found that meal skipping from time to time has drastic effects on physical health, and low-fat eating has a positive effect on physical health. Similarly, compared to females, males have better physical and psychological health because of their dietary preferences and maintenance and engagement in extracurricular activities and physical exercises that keep them healthy. One's behaviour along with one's attitude is shaped by one's environment. However, as human nature is bound to change it is equally possible to follow and adapt to a trend and then change towards a healthy lifestyle. Self-realisation, social change, and exposure to desirable food habits can guide one towards a better lifestyle and help control the onset of many physical and psychological diseases, only if eating patterns are changed towards healthier (Story *et al*., 2002). This research will be effective in managing the onset of many physical and psychological diseases like obesity, cardiovascular diseases, depression, anxiety, *etc*. It can also be a source of information for parents, students, teachers, and everyone to bring about positive lifestyle and eating behaviour changes leading to health-related high quality of life.

Limitations

This cross-sectional research was carried out during COVID 19 Pandemic for which data was collected through an online survey. It focused on a specific age range, i.e., 18 to 35 years and targeted a specific area of Pakistan, i.e., Rawalpindi and Islamabad. Hence a wider scale study needs to be done to study different eating patterns among the Pakistani population in its entirety to generalise the findings logically. Future studies incorporating interviews can prove beneficial, to understand the participants' perception of their food choices against various health issues.

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