



Psychological Impact on the Eating Behaviors of University Students

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Authors' contributions

This work was carried out in collaboration with all authors. Author DK designed the study, helped with the thematic analysis and conducted the final editing of the manuscript. Author MWDSMJ wrote the literature review, collected the data and conducted the thematic analysis. Author NDUV wrote the first draft of the article, the discussion section and completed the references. All authors read and approved the final manuscript.

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ABSTRACT

Unhealthy dietary habits are among the major risk factors for chronic diseases, particularly if adopted during the early years of adulthood. They are becoming more frequent due to the nutritional transition that is affecting populations across developing countries where traditional healthy diets are being progressively replaced by more westernized dietary patterns. Students generally develop unhealthy eating habits during their stay at the university. University Students' eating behavior seemed to be moderated by university characteristics, such as residency, student societies, university lifestyle, and exams. Therefore, the purpose of this study is to explore, how such factors psychologically influence Sri Lankan university students' eating behavior, using a qualitative research design. Applying a semi-structured interview method, six interviews were conducted with 2 male and 4 female university students selected under the convenient sampling method from the University of Peradeniya. All the collected data were analyzed using the thematic analysis method. Results showed that after the transition from secondary school to university, when independence increases, students are continuously challenged to make healthy food choices. Students eating behavior is reported to be influenced by individual factors (e.g. taste preferences, self-discipline, time and convenience), their social networks (e.g. (lack of) parental control, friends and peers), and physical environment (e.g. availability and accessibility, appeal and prices of food products).

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1. INTRODUCTION AND LITERATURE REVIEW

Food is so important and permeates human life in so many ways, that it engages and interacts with almost all of our activities: leisure, the arts, sex, work, sleep, etc. University is a critical period regarding unhealthy changes in eating behaviors in students. Most of the young adults leaving their parents and living away from home to attend university experience numerous behavioral changes, including the adoption of unhealthy dietary habits like consumption of high caloric snacks, fast foods, lower consumption of fruits and vegetables, and skipping meals [1,2].

Unhealthy dietary habits are among the major risk factors for chronic diseases, particularly if adopted during the early years of adulthood. They are becoming more frequent due to the nutritional transition that is affecting populations across developing countries where traditional healthy diets are being progressively replaced by more westernized dietary patterns [3]. University students seem to be the most affected by this nutrition transition [4].

1.1 Psychological Impact

[5] states that Psychology is the science of behavior and mind that embraces all aspects of conscious and unconscious experience as well as thoughts. The word 'psychological' means, of or relating to psychology. The Oxford English Dictionary gives two definitions of the word impact: 'the actions of one object coming forcibly into contact with another' and 'a marked effect or influence'. Therefore, we can conclude that 'psychological impact' is the effect of certain circumstances surrounding the real state relating to psychology.

1.2 Eating Behaviors

Normally, people engage in eating behaviors as a matter of survival, every day. One has to make choices about what to eat, when, and how much. In contrast to our ancestors, however, whose primary task was to seek out any food that would provide energy and nutrients, those choices have become more difficult nowadays. In western or westernized societies, in particular, food is abundant, cheap, and available in a great variety. Moreover, eating is a fundamentally rewarding

behavior and is thus intrinsically linked to mood and emotions [6].

1.3 Psychological Impact on Eating Behaviors

Many people use food as a coping mechanism to deal with such feelings as stress, boredom, or anxiety, or even to prolong feelings of joy [7]. People think we eat because of hunger (biological process) but eating can be triggered even in the absence of hunger or extended beyond satiation [8]. Numerous factors are known that determine or guide eating behavior automatically and implicitly [9] by the presence of others [10], environmental factors, e.g., advertising, packaging, portion sizes, lighting, and many more [11,12] monitoring and self-regulation of eating are necessary to eat healthily, i.e., to provide the body with the right nutrients both qualitatively and quantitatively. At the same time, eating healthily also means to be able to enjoy the rewarding aspects of food without falling prey to a loss of control over eating [13]. Emotions like depression, happiness, stress, anxiety, boredom, and loneliness ignite snacking and other unhealthy eating patterns. Thus, psychosocial factors may also influence unhealthy eating habits. Rapid changes in physical growth and psychosocial development have placed these young adults in the universities as a nutritionally vulnerable group with poor eating habits that fail to meet dietary requirements [14]. The eating habits of young adults represent a problem of special social relevance; these include a group of unhealthy eating habits which include skipping meals, eating away from home, frequent snacking, high consumption of fast food, and carbonated beverages. Although these habits are temporary, unhealthy habits picked up at this age persist in older life [15].

1.4 Eating Behaviors of University Students

[16] studied determinants of eating behavior in university students. The results of this study show that after the transition from secondary school to university, when independence increases, students are continuously challenged to make healthy food choices. Students reported to be influenced by individual factors (e.g. taste preferences, self-discipline, time and

convenience), their social networks (e.g. (lack of) parental control, friends and peers), physical environment (e.g. availability and accessibility, appeal and prices of food products), and macro environment (e.g. media and advertising). Furthermore, the relationships between determinants and university students' eating behavior seemed to be moderated by university characteristics, such as residency, student societies, university lifestyle, and exams. Recommendations for university administrators and researchers include providing information and advice to enhance healthy food choices and preparation (e.g. via social media), enhancing self-discipline and self-control, developing time management skills, enhancing social support, and modifying the subjective as well as the objective campus food environment by e.g. making healthy foods price-beneficial and by providing vending machines with more healthy products. This was the first European study examining perceived determinants of eating behavior in university students and collecting ideas and recommendations for healthy eating interventions in a university-specific setting. The authors recommend that University characteristics (residency, exams, etc.) influence the relationships between the individual and university students' eating behavior, and should therefore be taken into account when designing effective and tailored multilevel intervention programs aiming to improve healthy eating behaviors in university students.

According to Sheikh, Manerkar & Gokhale (2016), social and psychological factors did influence the eating behaviors among university students. More than half of the participants of their study indicate breakfast as the most important meal and yet many of them skipped breakfast daily. Lack of time was the major reason for skipping meals among students. The inclusion of healthy foods such as green leafy vegetables and fruits in the student's diet was rated poor whereas consumption of unhealthy foods including packaged foods and carbonated beverages was rated higher. Female students prominently indicated having eating disorders. Low cognitive restraint was seen among the majority of the participants. The predominant emotion that influenced eating behavior was happiness. [17] identified three dietary patterns among university students in Lebanon, namely a vegetarian/low-calorie dietary pattern (characterized mainly by consumption of plant-based food while avoiding "western" food, composite dishes, and bread); a mixed dietary

pattern (characterized by high consumption of plant-based food, followed by composite dishes, bread, and low consumption of western type food); and finally, a westernized dietary pattern (characterized by high consumption of white bread and western food, and a strong avoidance of plant food and composite dishes). They observed significant differences between males and females in terms of their reported food intake and dietary patterns. Females were particularly more prone to adopt the vegetarian/low-calorie diet than males, while males, mostly in private universities were more likely to adopt a westernized diet. Students with high income and obese students were more likely to consume a vegetarian/low-calorie diet. The conclusion was male university students reported higher consumption of the westernized dietary pattern as compared to female university students, while the latter reported a higher adoption of a vegetarian diet and they suggest health promotion programs are needed to address the dietary intakes and lifestyle behaviors of young adults in Lebanon to help prevent obesity and other associated comorbidities.

[18] has done a study about dietary habits among college students at-risk and not-at-risk for eating disorders and how such habits compare to the dietary guidelines. The research objectives were to examine associations between eating disorder risk and dietary habits. The conclusion of this study was Overall dietary intake did not vary significantly between at-risk and not-at-risk subjects, except for lower caloric intake and fewer fried vegetable servings in those at risk. Both groups failed to meet the dietary guidelines for fruits, vegetables, whole grains, and dietary fiber. Educational interventions emphasizing the dietary guidelines may improve eating disorder risk but warrant more specific targeting of poor dietary habits to increase the college populations' compliance with the dietary guidelines.

In a Sri Lankan study regarding the eating patterns of university students, [19] concluded that the university environment influence students to pay less attention to the quality and the equilibrium of food. Their economic status and time availability also was a major influence on their food behavior. The research shows the need to examine the quality of food supply by the food suppliers for lessening the health issues faced by university students.

Another study was conducted in Sri Lanka by [20] on the Pattern of Consumption of Fruits and Vegetables by Undergraduate Students. They

concluded that gender, income, taboos, and knowledge score have shown a significant effect on fruit and vegetable consumption among tested undergraduate students. Further, it was revealed that a high proportion of the students were unaware of the health benefits of the consumption of fruits and vegetables.

Because of the richness and complexity of human food choice, many disciplines have something to say about it; biology, psychology, sociology, anthropology, economics, history, and medicine, among others. The plain fact is that the biggest determinant of what an individual eats is availability. One eats what is there, and more critically, one does not eat what is not there [21]. This mundane fact should not discourage intellectual inquiry, because the determinants of what is available to any individual have biological, psychological, social, cultural, and historical aspects.

These are some studies that have examined the eating behaviors of university students. Most of the prevailing studies in the field in Sri Lanka are from biology, food science, sociology, anthropology, and economics. To the best of our knowledge, there are no Sri Lankan, (qualitative or quantitative) studies that have been conducted on determinants of psychological impact on eating behaviors of university students in Sri Lanka. Hence there is a need for Sri Lankan studies investigating determinants of eating behaviors of university students in Sri Lanka from the viewpoint of psychology. Therefore the purpose of this study is to explore which factors affect psychologically to change the eating behaviors of the university students in Sri Lanka. Furthermore, we aimed to collect ideas and recommendations to facilitate the development of effective intervention programs aimed to improve healthy eating behaviors in Sri Lankan university students.

2. METHODOLOGY

A sample of 06 participants, an optimum number suitable for a qualitative study considering the time, access, and availability, consisting of university students were chosen from the University of Peradeniya, Sri Lanka for data collection. The selection of the sample was based on convenience; they all were in their final year of studies, and were from three faculties, Arts, Science, and Agriculture, and known personally to one of the researchers. Four (04) of them were female, and the other two (02) were

male. Concerning ethnicity, all respondents were Sinhalese and Buddhists. The method of data collection of the study was semi-structured interviews. The interviews were conducted in the hostel rooms of the female participants and at the Faculty of Arts student common room with the male participants. With the consent of the participants, the interviews were conducted with a pre-planned set of questions, developed based on the literature review and related to the research topic to capture the relevant and valid information from the participants' experiences. The questions were related to psychological factors which affect eating behaviors such as individual factors (taste preferences, self-concept and body image, time and convenience, dietary knowledge, values, norms, beliefs, state of mind), social networks (lack of parental control, social support) and physical environment (availability and accessibility, price of food products). Although all six participants were interviewed by using the same set of questions a great amount of flexibility was adopted and the participants were given an ample opportunity to explain their opinions and ideas on the research topic. While respecting the participants' freedom to withdraw from the research anytime, the researchers ensured the confidentiality and security of the information gathered from the interview. The interviews were recorded using an audio tape recorder and transcribed using audio to word software.

3. RESULTS

The objective of this study was to identify the psychological impact of the eating behaviors of university students. The data were analyzed using thematic analysis and resulted in three major frameworks and, under them, some factors that explained the psychological impact of eating behaviors of university students. The three major frameworks were: Individual factors, Social networks, and Physical environment. Under these three major frameworks, the study discusses several factors that psychologically impact the eating behaviors of university students. The individual factors described were taste preferences, self-concept and body image, time and convenience, Dietary knowledge, Values norms and beliefs, and state of mind. The social network consisted of lack of parental control and social support and under physical environment availability and accessibility and price of food products were described. The three major frameworks and factors under them are shown in Fig. 1.

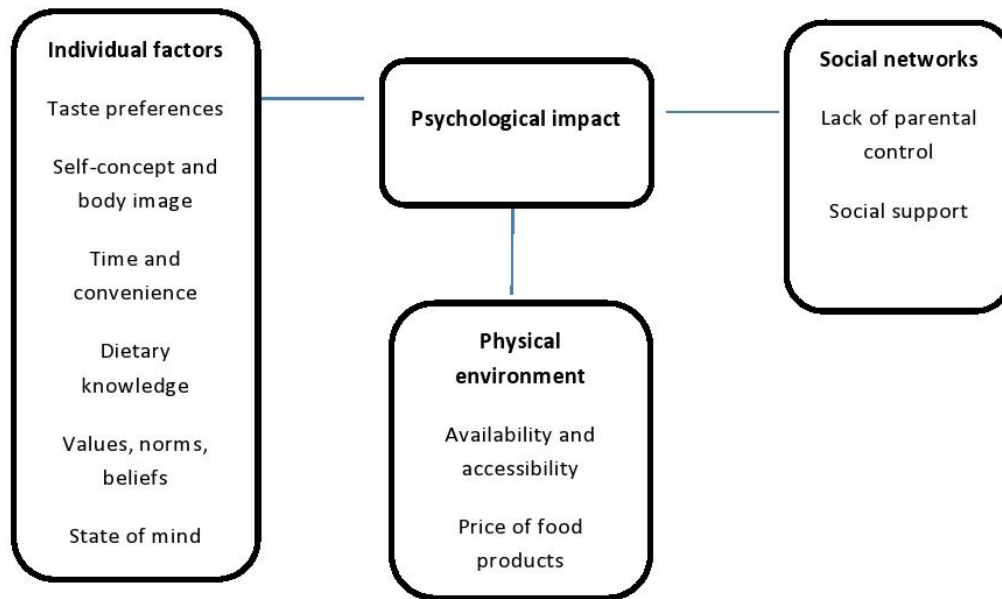


Fig. 1. Psychological impact

The letters F and M were used to represent the female participants and male participants respectively.

3.1 Individual Factors

Under this category, we considered sub-themes on taste preferences; self-concept and body image; time and convenience; dietary knowledge; values, norms, and beliefs; and the state of mind.

Taste preferences: Students reported that ‘taste’ is an important factor influencing their food choices. Taste can make students eat unhealthily; however, it can help them make healthy choices as well.

F-3: *I choose to eat fruits because I like fruit*

F-1: *I don't eat rice because the canteen rice and curries are not tasty. So I choose short eats. Usually, I eat two 'Parata bread' as my dinner. Then, I feel good than by eating rice.*

Self-concept and body image: Students spoke about their body image and how it can affect their eating behaviors. Most of them are concerned about their body image and try to make their dietary patterns to suit it. Most of them, especially females, are hoping for a slim body.

F-2: *As I am not satisfied with my body image I am very concerned about food and try to eat and*

drink well. When I wear a dress it is not nice on me because I am too slim.

F-4: *Since my tummy is large I can't dress according to my wishes. So I started to diet*

Time and convenience: Time seems to be a very important issue when talking about students' eating practices. Students indicated that they would rather spend time on other activities than cooking, especially when they have to cook only for themselves. Participants acknowledged that ‘time’ is a relative term and it is often related to personal priorities.

M-1: *Here on campus I always have something else to do instead of cooking.*

F-4: *The faster my meal is ready; I can install myself in front of the Laptop to watch a film or a T.V series*

According to students, ease and convenience which is related to time is an important factor as well.

F-4: *I want it to be easy, so I don't have to cook for one hour for myself, so I grab something that can be warmed up quickly.*

Time is mentioned to be especially important during exam periods.

F-1: *During exam periods I eat short eats because it is easy. Most of the time during exam*

periods I take my breakfast while traveling. It may be a 'roti' or something like that

Dietary knowledge: Participants believed that certain dietary knowledge is needed to be able to make changes in one's eating pattern. To a certain extent, students seemed to be aware of what is good for their health.

M-2: Actually, I don't like eating vegetables, but I know that I need it and that's why I eat vegetables

However, they also stated that knowledge is just a first step and will not automatically lead to healthier food choices.

F-3: Students know that we should stay healthy because we will get pregnant and should bear babies. But while they are at the university they always try to forget and suppress those thoughts.

M-1: All the time I search on the internet about these issues. So I am aware of that side.

Values, norms, beliefs (ethical, moral):

According to the participants, norms, and values, as well as personal beliefs, can psychologically influence students' eating behaviors. One student explained that moral conviction had driven her to become a vegetarian.

F-1: From the moment I became a vegetarian, I didn't have a need to eat meat anymore.

F-3: Yes, the thing that I believe highly is we don't want to eat the flesh of the other beings to live

Students also explained that they sometimes changed their eating behaviors due to a feeling of guilt when eating unhealthy foods such as fatty or oily foods.

M-1: I eat only two meals per day. I don't take my dinner. Eating that much is enough for me.

F-4: I like to eat food without changing the real taste of it. But now I have reduced eating oily foods.

State of mind (stress): Students experienced the transition from school to university as a stressful period [22]. Participants also revealed that exam periods (when academic achievement pressure is highest) provide a lot of stress [23]. Participants strongly believed that eating choices

during stressful periods can be influenced in both directions. Some tend to eat healthier while others' eating patterns tend to worsen when experiencing such 'high' stress.

F-1: I eat more during exam periods and tend to eat more snacks and bites

F-4: During the exam period my eating patterns get changed because I stay awake longer. So, I drink more tea and eat more sweets and snacks.

M-1: Most of the time during the exam period, I eat with friends. I go to the canteen with them for tea. I am always waiting for someone's call for tea. Because tea breaks always give a 'pickup' to study again

Extracurricular factors like student society meetings also influence the mindset of students'. So it also influences their eating behaviors.

M-2: There are some days when I miss the meals because of issues such as 'rep meetings'. When there are lots of outside work to do I do not think about meals much.

3.2 Social Network

Lack of parental control: Students felt that parental control had a crucial role in their eating behaviors [24,25]. When parental control is lacking it can have a great influence on individual food choices.

M-1: After the transition from school to university, parental control decreased, so consequently 'freedom' increased, we became more self-dependent. And that influenced our eating behavior also. For example, in school, you had home-prepared food for lunch, while at university you eat 'kadachoru – unhealthy foods'.

Moreover, alcohol and cannabis consumption was described to be more common when parental control is lacking [26].

M-2: In the hostels, it is easier to play drinking and 'ganja - cannabis' smoking games because our parents cannot see what we're doing.

Social support (friends and family): Students revealed that support from family and friends can influence their eating behavior and emphasized the importance of a great social support network. Living together with peers can also influence eating behaviors [27].

M-1: *There are occasions when I accept friends' requests to go for a meal although I am not hungry. I accept it because I know that if I go with them I can have some fun.*

Intimate partners, especially boyfriends, also psychologically affect the eating behaviors of university students. When they are at university they can move freely and be together most of the time. So, they take their meals together and sometimes they give priority to their partner's choices by suppressing their own choices.

F-2: *I don't like to eat fatty and oily foods. But if he selects them I don't express my dislike and eat silently.*

F-2: *Even if I become very hungry I always wait to take meals with hi.*

3.3 Physical Environment

3.3.1 Availability and accessibility

When students have easy access to (on-campus) eating facilities, they seem to get tempted more easily. For example, the university canteens' meal offers seem to influence students regarding their individual food choices.

F-3: *Even if we have money we don't have a chance to eat what we like because definitely, we need by from the menu of the canteen. We have to select only what is in there.*

F-1: *I am a vegetarian. Most of the time, the canteen menu is filled with non-vegetarian foods. There is very little space for vegetables. So on some such occasions, I miss my meals.*

Price of food products: Food product prices and individual budgets also influence students' food choices. When eating outside the university, they have to spend more money. The price of 'normal' rice in the university canteen is about 30 Rupees whereas outside it can be 80 rupees upwards. So students always try to take their meals from the university canteens as it is favorable to their budget. Some of them even cook in their hostel rooms (although not allowed) because it is cheaper and they get to choose what they eat.

F-4: *I cook at the hostel because it is easier on my budget and I can eat according to my wishes.*

F-2: *There are varieties of non-vegetarian food items on the canteen menu. But they are*

expensive. So students try to buy only vegetables as extra curries. We have to spend money on 3 meals per day when we are in the hostels. So we have to think about money also

As we can see, under three major frameworks the study discusses several factors that psychologically impact the eating behaviors of university students. Researchers described taste preferences, self-concept and body image, time and convenience, dietary knowledge, values, norms, and beliefs, and the state of mind as individual factors. Under the social network factors, lack of parental control and social support were described, and under physical environment factors availability and accessibility, and price of food products were described. All of the above, collectively, described the psychological impact on the eating behaviors of university students.

4. DISCUSSION

The purpose of this study was to identify the psychological impact on the eating behaviors of university students. Furthermore, the researchers aimed to identify different types of eating behaviors of university students and look into other factors that impact their eating behaviors. The researchers identified three major frameworks here. They were: Individual factors, Social networks, and Physical environment.

Under these three major frameworks, the researchers identified several factors that psychologically impact the eating behaviors of university students. As individual factors, the researchers identified the taste preferences, self-concept and body image, time and convenience, dietary knowledge, values, norms, and beliefs, and state of mind.

Students reported that 'taste' is an important factor influencing their food choices. Taste can make students eat unhealthily; however, it can help them make healthy choices as well. The results show that the students sometimes miss their meals due to the conflict between their taste preferences and the available menu of the canteen.

Food product prices and individual budgets also psychologically influence students' food choices. When eating outdoors, they need to spend more money. The price of 'normal' rice in the university canteen is about 30 Rupees which is very cheap compared to outside prices. So students always try to eat from the university canteens as it is

favorable to their budget. The study shows that students often prioritize cost and convenience over health. Moreover, previous studies found that price is one of the most influential individual factors (next to taste) in determining food choices in both adults and adolescents [28,29].

Time seems to be very valuable when talking about students' eating practices. Students indicated they would rather spend time on other activities than cooking, especially when they have to cook only for themselves. Participants acknowledged that 'time' is a relative term and it is often related to personal priorities. Living arrangements (residency) and exams were mentioned to be influencing students' eating behaviors. Although they do not have time and are not officially allowed to cook in the hostels few students cook in the hostel rooms.

Participants believed that certain dietary knowledge is needed to be able to make changes in one's eating pattern. To a certain extent, students seemed to be aware of what is good for their health. However, they also stated that knowledge is just a first step and will not automatically lead to healthier food choices. Although they have the knowledge, healthy food choices may become a low priority when compared to their other commitments; Students experienced the transition from school to university as a stressful period. Participants also revealed that exam periods (when academic achievement pressure is highest) provide a lot of stress. They strongly believed that eating choices during stressful periods can be influenced in both directions. Some tended to eat healthier. Others' eating patterns tended to worsen when experiencing such 'high' stress. They believed that they are continuously challenged by competing demands such as academic responsibilities and involvement in extracurricular and social activities. Therefore, participants stated that students might be more likely to buy foods that are fast, convenient, and inexpensive.

Students felt that parental control had a crucial role in their eating behaviors. When parental control is lacking it can have a great influence on individual food choices. Also, the results revealed that when living in a student residence hall that food prices become more important when making food choices. As an example, students have to pay attention to 'what' they buy. Thus, a stronger relationship between food prices and eating behavior might be observed when students live away from home in

comparison to those living with their parents. As their parents can't see what they are doing in the hostel, they tend to enjoy their freedom. So the study suggests that facilitating the development of effective and tailored intervention programs aiming to improve self-regulation among university students will be very useful.

Students' food choices are influenced by the availability and accessibility of healthy foods and cooking supplies. When students have easy access to (on-campus) eating facilities, they seem to get tempted more easily to eat unhealthy foods. For example, the university canteens and its meal menus seem to influence students regarding their individual food choices.

5. CONCLUSIONS

According to this research, students were found to be influenced by individual factors, their social networks, and physical environment in their eating behaviors. Furthermore, university characteristics, such as residency, student societies, university lifestyle, and exams also highly impact the eating behaviors of university students. After the transition from secondary school to university, when independence increases, students are continuously challenged to make healthy food choices. They have to be self-disciplined, have self-control, and thus often have to prioritize healthy eating over other (university-specific) social activities to prepare or buy a healthy meal. Preparing their meals are prohibited in the university hostels, therefore they have to buy meals from some outside premises all the time. Also, students have to make these healthy food choices within a university-specific setting (e.g. living in a student residence, having exams), depending on the availability and accessibility, appeal, and prices of food products. Moreover, during this choice-making process, students are either controlled or not controlled by their parents and are influenced by friends and peers.

Recommendations for university administrators and researchers include providing information and advice to enhance healthy food choices and preparation (e.g. via social media), enhancing self-discipline and self-control, developing time management skills, enhancing social support, and modifying the subjective as well as the objective campus food environment by making healthy foods available and affordable. As the study was qualitatively conducted using a very small sample of six participants, a quantitative

study with a much larger sample that is representative of gender, ethnicity, religion, and class, and consisting of all faculties of the university needs to be conducted in order to generalize the findings.

CONSENT

Participants were given an informed consent form including objectives, duration, and procedure of the research, and only the students who volunteered to participate were interviewed.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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