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Structural Equation Model of Predicting Mental Health Based on Gratitude Skills and Academic Resilience with the Mediation of School Bonding

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ABSTRACT

Objective: The purpose of this study was to test the model of the causal relationship between gratitude skills and academic resilience with mental health with the mediation of the school bonding in the female students of the high schools in Hamedan city in the academic year of 2022-2023.

Methods: For this purpose, 383 students were randomly selected by multi-stage cluster sampling method and completed the research tools including mental health questionnaire, gratitude questionnaire, academic resilience questionnaire and school bonding scale. For data analysis, descriptive statistics and inferential statistics (Pearson's correlation coefficient and regression) were used with SPSS software.

Results: The results obtained by using path analysis showed that the indirect effect of gratitude skill on mental health through school bonding is significant also the indirect effect of resilience on mental health through school bonding is also significant. The effect of gratitude skill on school bonding is positive and significant and it is not significant on mental health. Also, the skill of gratitude has a positive and meaningful relationship with the school bonding and a negative and meaningful relationship with mental health. Academic resilience has a positive relationship with the school bonding and a negative and significant relationship with mental health.

Conclusions: The role of gratitude skills and academic resilience has been found to have an impact on the mental well-being of high school students in general.

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Introduction

The concept of mental health has always been the focus of education professionals and practitioners, education systems, psychologists and educational consultants. Today, along with the development of societies, stress and psychological pressure have also become common. However, mental health problems are not age-specific and affect people of all ages. "Paying attention to the mental health of people is a necessary and essential thing, as far as the World Health Organization considers mental health issues as part of primary health care" (Yaghoobi et al., 2022).

In the best condition, mental health is a complete state of the absence of signs of illness, as well as the presence of signs of health and well-being in life, which are considered essential and basic needs of people at any time (Keyes, 2002). Mental health is having internal empowering characteristics or internal power resources, while having these resources enables a person to continue to grow adaptively and maintain his mental health despite negative circumstances and events (Evans et al., 2018). Mental health is the ability to communicate appropriately and harmoniously with others, modify the personal and social environment, and solve personal problems and conflicts in a reasonable and fair manner. In order to live a healthy life, it is considered necessary to have good mental health. Mental health is a multifaceted matter, the essential conditions of which are behavioral, psychological and emotional balance (World Health Organization, 2013).

Mental health is of vital importance in the lives of teenagers because due to the presence of more stress factors during adolescence, the commitment and identity of teenagers will be weakened and having mental health skills can play an important role in gaining mental health and increasing the quality of life (Yaghoobi et al., 2022). According to statistics report, 75% of mental disorders begin in adolescence (Reid, Kauer, & Patton, 2011). Abbas and Raja (2015) believe that there are positive traits and capabilities that can be a strong source of growth and promotion of mental health. One of these positive traits is resilience and the other is gratitude, of course, both of them can be trained and improved. Therefore, in this research, the relationship between these two positive traits and mental health has been investigated .

The word gratitude is defined as appreciate or magnanimity. All the derivatives of the Latin root of the word gratitude refer to kindness, forgiveness, giving and receiving and etc.. Louise L. Hay (1926) in his famous work, The Book of Gratitude, repeatedly refers to the concept of gratitude

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and believes that gratitude not only attracts good people and events in life, but also creates a good feeling and positive thinking in the human being. According to this great author, gratitude increases the things for which we are grateful. Young Zee Borysenko (cited by Hay, 1926) believes that gratitude and appreciation is like a lever that can change the mental mechanism of a person from obsession to peace, from stagnation to creativity, and from fear to love. Caroline A. Bratton (cited by Louise L. Hay, 1926) believes that if you thank God for the little things in life, the greater things will come from unexpected sources. If you are not satisfied with your current life, it is because of a problem in your attitude of gratitude.

Emmons (2002) considers the facilitating factors of gratitude to include an open and optimistic view of the world, a sense of spirituality, empathy and humility, and believes that the obstacles to gratitude in a person include things such as the perception of oneself as a victim, feeling completeness, selfishness, and the lack of self-thinking" (Yaghoobi, Azadi, Alimohammadi, 2022). Gratitude as a positive emotion can help build and expand. It can be said that gratitude creates and expands new thoughts and actions (Fredrickson, 2004). Emmons (2007) considers gratitude as a condition of living and being together in today's civilized and advanced societies and states that in today's world, it is impossible to imagine that gratitude does not exist. Experimental studies have shown that gratitude is associated with positive psychological consequences. Gratitude is related to spirituality, mental health, life satisfaction, commitment, happiness and even better sleep quality (Agha Babaei, Farahani, Tabik, 2011). In psychology, gratitude is an emotional and cognitive state. In this regard, Emmons and McCullough (2003) believe that in a state of gratitude, we remember the good things that others have done for us because of our well-being. A lot of research has been done in this field. Azargun, Kajbaf and Qumrani (2017) concluded in their research that the students of the experimental group experienced more happiness and hope after receiving gratitude training. Also, Lee (2017) concluded in his research that subjects experienced higher self-esteem and happiness after receiving gratitude training .

Naseem (2019) stated in his research that after receiving gratitude training, the subjects experienced more happiness, innovative thinking and more hope, and their intellectual abilities and individual skills expanded. Algoe, Haidt and Gable (2008) found that gratitude expands relationships and maintains new ties. Accordingly, Frederickson (2004) considers gratitude as a

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positive emotional state that helps to create and develop new ways of thinking and establishing relationships, and believes that although gratitude seems to be a very simple act, repeating this simple act causes creating and establishing social bonds and friendships with other people. Also, according to Abbas and Raja (2015), one of the positive traits and capabilities that can be considered as a strong source for promoting and increasing mental health in people is “gratitude”. Because of this relationship between gratitude and creating social ties, and the relationship between gratitude and mental health, in this research, the relationship between gratitude and mental health with the mediation of the factor of school bonding has been investigated.

According to Deming and Lochman (2008), faced with stress and life-threatening situations, people feel helpless and engage in abnormal behaviors, and if this way of behavior exists in their lives for a long time, it will lead to health problems. They will be physically and psychologically damaged, and this causes their general health to be affected in all aspects of life (Sheikhzadeh Golanji et al., 2013). Many students face problematic social and educational situations during their studies, at school, in the community, and even at home, which can lead to their failure in school and society and affect their fate (Foster, 2013).

One of the factors that can help students deal with these situations properly is a factor called resilience that can help their psychological health. Hart and Gagnon (2014) defined academic resilience as follows: "the ability to effectively deal with pressure, stress, and difficulties in academic activities" (Yaghoobi et al., 2022). Resilience is defined as the ability of humans to adapt in the face of pressures and disasters, overcome them, and even be strengthened by those experiences. Students who have academic resilience often return to normal life with positive emotions after facing stressful situations. Resilient students go through stressful academic situations without being psychologically injured or ill (Salmela et al., 2010). Resilience in the educational environment is considered as a very high probability of success in school and other life situations, despite environmental problems and hardships, and resilient students achieve high success despite social, cultural and economic problems and difficulties. (Yarahmadi et al., 2018).

According to Masten and Monn (2015), resilience does not have not only passive side in threatening situations, but also it has active and constructive participation in the social environment. Resilience helps a person to maintain his biological, psychological and spiritual balance in the face of dangerous conditions and restore and rebuild himself. Resilience is

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considered one of the appropriate strategies to improve mental health in people (Yaghoobi et al., 2022). Ryff and Singer (1998) believe that resilient people can generally maintain their physical and mental health and easily overcome stressful life events. Also, Frederickson (2001) states that, based on evidence, resilience is effective in improving and promoting mental health. In this regard, Yaghoobi and Bakhtiari (2015) concluded in their research that resilience in the educational environment reduces academic burnout and increases the mental health of students. Also, Yarahmadi et al. (2018) concluded that resilient students have less procrastination and better performance. Finally, according to Lutans et al. (2008), psychological asset is a positive developmental state, one of its characteristics is resilience. Therefore, in the current research, the relationship between resilience and mental health of students has been examined.

Yuen et al. (2012) believe that school bonding includes students' feelings, thoughts, and behaviors related to their educational experience. School bonding affects different aspects of students' lives and is called by other names such as commitment and attachment to school (Chapman et al., 2011). The concept of school bonding refers to various aspects of students' academic life. Finn and Casra (2009) have shown that students who feel connected to school have better interaction with school and feel more commitment to school. School bonding includes commitment, belief, and connection (Catalano, Haggerty, Osterle, Fleming, & Hawkins, 2004). School bonding includes dimensions such as attachment to school, participation in school, belief, and commitment to school (Yaghoobi et al., 2022). Commitment to school is defined as personal investment in school activities and school priority for students. Participating in school is participating in school-related activities, and ultimately it is accepting school-related norms and values. According to Bakus (2010), the concept of school bonding is derived from the theory of social control. According to this theory, the only reason that makes people go against their immoral nature and follow the rules is their connections with individuals and society. When people establish weak bonds with each other and can't blend in with the society, they act according to their inherent immoral tendencies (Qazi Tabatabai, Hijazi, and Rezaee Sharif, 2018).

Allen et al. (2018) believes that having a sense of belonging and attachment to school is considered as a main prerequisite for academic performance. Students who have more ties to the school are in a better situation in terms of academic performance and desirable social behaviors. Various studies

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have shown that having a sense of belonging and attachment to school is related to students' academic performance, self-esteem, and academic success (Kiefer, Alley, and Ellerbrock, 2015). According to the research conducted by Yaghoobi et al, (2019), the feeling of bonding to the school is considered as one of the important factors of students' academic well-being. Ream and Rumberger (2008) concluded in their research that school bonding has a negative relationship with the rate of absenteeism and dropping out of school. According to Libbey's research (2004), students who have a strong sense of bonding to the school consider themselves to belong to the school and believe that the teachers support them and ultimately feel better about the school .Also, the research findings of Niehaus et al. (2012) and Catalano et al. (2004) have also shown that there is a positive and significant relationship between school bonding and mental health. Because of this positive and significant relationship between school bonding and mental health, which has been proven in different researches, in the present study, the relationship between gratitude and resilience with mental health of students has been investigated through the mediation of the factor of school bonding.

Material and Methods

The method of the current study was correlational. The statistical population of the research included all high school students of Hamadan city in the academic year of 2022-2023, that 400 subjects were selected by random cluster sampling method. From the implemented questionnaires, 17 sample were incomplete, and the final analysis was performed on 383 subjects. Descriptive and inferential statistics (Pearson correlation coefficient and path analysis) with SPSS and Lisrel software's were used for data analysis. The following questionnaires were used to collect data:

Mental health questionnaire: The general health scale of Goldberg and Hiller (1979) was used to check the mental health of students. This scale has 28 items and four components in the following order: physical symptoms, anxiety symptoms, social functioning, and depression symptoms. In this questionnaire, 5 total scores are obtained for each person and the range of scores varies from 0 to 84, where higher scores indicate the severity of the injury. The reliability and validity of this questionnaire has been reported from 0.82 to 0.92 in most researches. Goldberg and Hiller (1979) reported the reliability and validity of this questionnaire as 0.84 and 0.82, respectively .

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Gratitude Questionnaire: This questionnaire was created by McCullough, Emmons, and Tsang (2002) and has 6 items. Respondents should answer the questions of this questionnaire on a 7-point Likert scale from strongly disagree (1) to strongly agree (7). McCullough et al. (2002) reported the reliability of this questionnaire from 0.76 to 0.84 and also reported the validity between 0.22 and 0.25 that was significant ($p<0.05$).

Academic Resilience Questionnaire: This questionnaire was created by Samuels (2004) and contains 40 items. The Iranian version of this questionnaire was standardized by Soltaninejad et al. (2012) and the number of items was reduced to 29 items. This questionnaire is scored on a 5-point Likert scale from completely disagree (1) to completely agree (5). Samuels (2004) obtained the reliability of this questionnaire with Cronbach's alpha method of 0.89. The construct validity of this questionnaire was estimated favorably in the study of Samuels (2004).

School Bonding Scale: This scale was developed by Springer et al., (2009). This scale is a ten-item instrument where students indicate their agreement or disagreement on a 5-point Likert scale. This tool has three subscales: supportive school relationships, student-school bond, and teacher-student bond. Students should express their opinion on a 5-point Likert scale from strongly agree (5) to strongly disagree (1). Thus, the minimum score for the whole scale is 10 and the maximum score is 50. Springer et al. (2009) reported the Cronbach's alpha of this tool 0.84 and also reported favorable construct validity. To carry out the work, one district was randomly selected from 2 education districts and then 4 first high schools were randomly selected, then 4 classes were randomly selected in each school and all the students of those classes participated in the research. With the coordination of the school officials, the questionnaires were made available to the class groups, the explanations related to the questionnaire as well as the information needed to fill in the questions were provided to the students. Ethical considerations included informed consent to participate in the research and withdrawal from the research as soon as the participants did not wish to continue cooperation. After data collection, descriptive statistics methods such as mean, standard deviation were used to examine and describe the variables, and Pearson correlation and path analysis statistical methods were used to examine the model by SPSS 22 and Lisrel 8.8 software

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Results

The sample of this study included 383 high school students. The mean and standard deviation of the total age of the sample was 14.11 ± 1.68 years. 139 students (36.3%) were in the seventh grade, 130 students (33.9%) were in the eighth grade, and 114 students (29.8%) were in the ninth grade. Outlier data was checked using a box plot and outlier data were replaced with the mean of the variables. Before performing the analysis, the assumptions of path analysis including normality of distribution, independence of errors and multiple collinearities were checked. To assume the normality of the research variables, the skewness and kurtosis of scores were used, the results of which showed that the distribution of the variables' scores is normal (the range of distribution is between +1 and -1). Durbin-Watson test was used to check the independence of errors; The value of this statistic was 1.82, which showed the lack of correlation between errors because the acceptable range is between 1.5 and 2.5. To check the multiple collinearities between the predictor variables, the variance inflation factor and tolerance were used, and the results showed that there is no co-linearity between the variables; Because the range of variance inflation was less than 5 and the tolerance was higher than 0.1. The normality of the distribution of errors was checked with the Q-Q diagram of the plot and the results of the diagram showed that the errors were normal. First, the mean and standard deviation along with the range of skewness and kurtosis of the distribution of the variables were checked, the results of which are presented in Table 1.

Table 1. Mean, standard deviation and skewness and kurtosis of research variables

variable	N	Mean	St. Deviation	Skewness	Kurtosis
Gratitude skill	386	29.06	3.51	-0.26	**0.36**
Academic resilience	383	76.19	7.04	-0.50	**0.04**
School bonding	383	37.89	4.96	-0.22	**0.57**
Mental health	383	45.51	11.43	-0.84	**-0.05**

The results of Table 1 show the mean and standard deviation of the main variables. The results of skewness and kurtosis of the variables are in the range of positive and negative 1, which shows that the distribution of the variables is normal. Next, the correlation between the variables is presented in Table 2.

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Table 2. Correlation between research variables

Variable	1	2	3	4
Gratitude skill	-			
Academic resilience	0.16**	-		
School bonding	0.45**	0.36**	-	
Mental health	**0.34****	**0.27****	**-0.62****	-

**P<0.01 *P<0.05

The results of Table 2 show that the skill of gratitude has a positive relationship with school bonding (r=0.45 and P<0.01) and a negative and significant relationship with mental health (r=0.34 and P<0.01). Academic resilience has a positive relationship with school bonding (r=0.36 and P<0.01) and a negative and significant relationship with mental health (r=0.27 and P<0.01). There is a negative and significant relationship between school bonding and mental health (r=-0.62 and P<0.01).

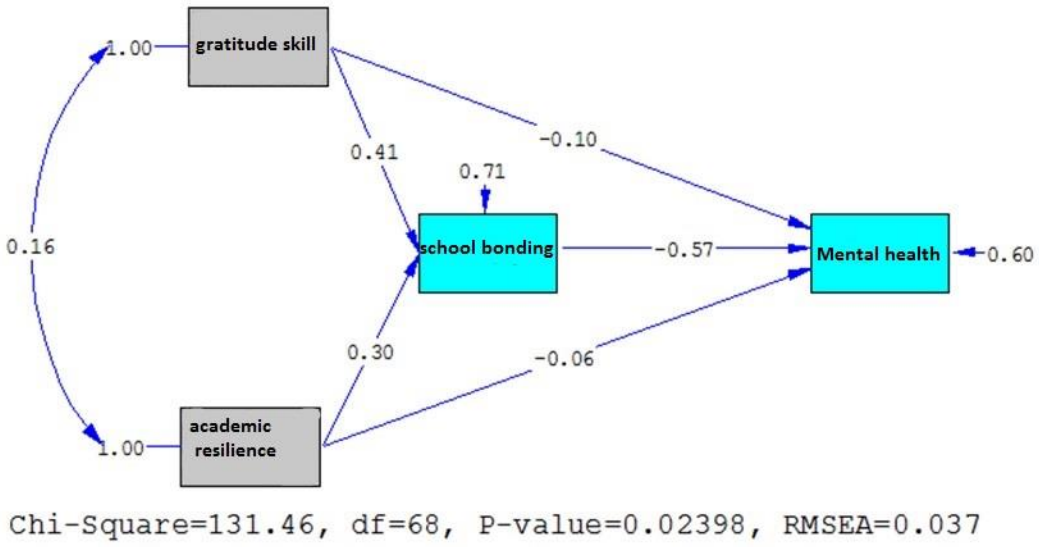

Fig 1. Standardized coefficients of the relationship between gratitude skills and academic resilience with mental health through the mediation of school bonding

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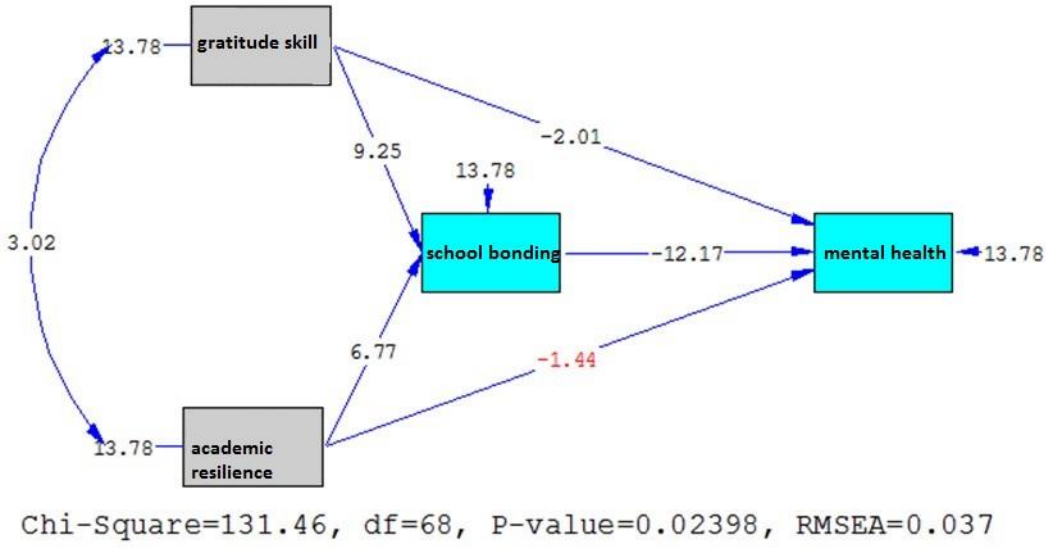

Fig 2. Equivalent significance levels of standard coefficients of variable relationships in the model

Figure 1 shows the model for examining the relationships between research variables. In this model, the variables of gratitude skills and academic resilience are placed as exogenous variables, whose direct effect on school bonding and their direct and indirect effect on mental health have been investigated. The direct effect of school bonding (mediating variable) on mental health is also estimated in the model. In the following, the direct and indirect coefficients of the relationships between the variables are presented in Tables 3 and 4.

Table 3. Coefficients of the direct effect of variables in model

Path	Direct effect	St. error	T statistics	P(value)
Gratitude skill → school bonding	0.41	0.18	9.25	0.001
Academic resilience → school bonding	0.30	0.11	6.77	0.001
Gratitude skill → mental health	-0.10	0.08	-2.01	0.023
Academic resilience → mental health	-0.06	0.14	-1.44	0.124
School bonding → mental health	-0.57	0.23	-12.17	0.001

The analysis of the data obtained from the relationships of the variables through direct coefficients in Table 3 shows that the effect of gratitude skill school bonding ($\beta = 0.01$, $p<0.41$) is positive and significant and on mental health is negative and significant ($p < 0.05$, $\beta = - 0.10$). The effect of academic resilience on school bonding ($\beta = 0.30$, $p < 0.01$) is positive and significant, and it is not significant on mental health ($\beta = 0.06$, $p> 0.05$). The effect of school bonding on mental health is negative and significant ($p<0.01$, $\beta = 0.57$). In order to investigate the significance of the indirect effects of gratitude skills and academic resilience on mental health, the bootstrap method was used, the results of which are reported in Table 4.

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Table 4. The results of investigating the indirect effect of gratitude skills and academic resilience on mental health

Path	Standard coefficient	Standard error	Confidence interval 95%	
			(Lower Bound)	(Upper Bound)
Gratitude → school bonding→ mental health	-0.23	0.019	-0.288	-0.124
Academic resilience → school bonding→ mental health	-0.17	0.011	-0.176	-0.092

In the bootstrap method, the level of confidence is 95 and the number of bootstrap resampling is 5000. If the upper limit and lower limit values (confidence intervals) do not include zero, the role of the mediating variable is significant. Based on the bootstrap results (95% confidence interval), it was found that the indirect effect of gratitude skills on mental health through school bonding (β = -0.23) with a confidence interval of -0.124 and -0.288 is significant. The indirect effect of academic resilience on mental health through school bonding (β = -0.17) with a confidence interval of -0.092 and -0.176 is also significant. In order to determine the overall fit of the model, various fit indices were considered. The fit indices of the model are presented in Table 5.

Table 5. index of fit for the developed model

Indices	Stimate
Goodness of fit index (GFI)	0.96
Incremental fit index (IFI**)**	0.97
Comparative fit index (CFI**)**	0.97
X^2	131.46
DF	68
X^2/ **DF**	1.93
Root mean square errors of approximation (RMSEA)	0.037

For the goodness-of-fit index X^2/df, values smaller than 3 are suitable and the closer it is to zero, it indicates a good fit of the model. In the current model, this index is 1.93, which is within the acceptable range. For Goodness of Fit (GFI), Incremental Fit (IFI) and Comparative Fit (CFI) values close to 0.90 and above are considered as acceptable fit, which indicates that the model is good. The values of all the indicators mentioned in the table 5 above 0.90 has been obtained. In connection with the residual root mean square index (RMSEA) in the model was 0.037, values close to 0.05 or less indicate a good fit of the model, and a value of 0.08 or less indicates a logical

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error of approximation; A value higher than 0.10 indicates the requirement to reject the model (Homan, 2016). The fit indices presented in Table 5 show the appropriate fit of the model.

Discussion

The findings indicated that in the current circumstance, the status of executive policies, factors pertaining to employees, educational equipment and environment, educational and cultural processes, and management departments were below the mean, while the status of executive strategies and enhancement of educational and cultural quality surpassed the average. The present state of monitoring and control activities was on par with the mean. At present, the concept of quality is a primary concern for numerous organizations. In reality, in today's competitive world, organizations must offer conditions that yield maximum satisfaction to their customers in order to survive and advance their position. Defining services has always been challenging due to the range of services. Adding to the complexity is the fact that because the majority of data is intangible, comprehending and identifying methods for executing and delivering services is often not straightforward.

Kotler (2003) contends that a service is an intangible activity or benefit that an organization furnishes without involving the ownership of any tangible entity; in other words, service provision may or may not rely on physical goods. Inferior-quality goods and services that fall short of expectations always lead to reduced credibility and trust among customers and users towards the suppliers and providers of said goods and services. There are several reasons why organizations should strive to deliver superior-quality services to their customers, including increasing customer expectations, competitive endeavors, environmental factors, the nature of services, internal organizational factors, and the advantages of service quality (Ebrahimzadeh and Kamasi, 2013). In the meantime, the key to effectively delivering services to customers lies in accurately ascertaining their needs and desires and subsequently addressing them appropriately (Karana, 2003).

To ensure the quality of educational and cultural services, two primary factors hold significance: the educational process and the performance of learners. This assurance necessitates access to accurate, comprehensive, and adequate information to facilitate appropriate decision-making. Consequently, enhancing the quality of education is intrinsically linked to improving the decision-

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making process within the educational system, which, in turn, necessitates the establishment of a management information system. As a result, decision-making at the school level becomes crucial, encompassing collective agreement on policies, educational objectives, educational requirements, labor market demands, societal needs, resource mobilization, and investment in education, all of which contribute indispensably to the improvement of educational quality (Fatih Rad et al., 2021). According to Zafiroflos (2007), service quality is paramount for the survival and profitability of higher education institutions. Acquiring feedback from customers constitutes a fundamental step in ensuring and enhancing quality. The feedback obtained from customers plays a pivotal role in identifying areas that require continuous improvement (Ramazanian et al., 2013).

However, there often exists a discrepancy between management's understanding of service recipients' perceptions and expectations and the actual perceptions and expectations held by these recipients. This disparity detrimentally affects service quality, primarily in organizations that fail to prioritize the recognition and fulfillment of customer needs and expectations. Consequently, decision makers and planners encounter difficulties in accurately determining priority matters, resulting in a quality gap (Bakhshi et al., 2019). The initial step in addressing this gap involves ascertaining service recipients' perception of the current situation and their expectations for the desired situation. The extent of the quality gap in the services provided can be determined by considering the viewpoints of service recipients, thereby providing a foundation for their satisfaction (Salamati, 2019). One of the noteworthy limitations of the present study pertains to the utilization of self-report questionnaires for data collection and the focus on a sample from the city of Qom. Consequently, these limitations ought to be taken into consideration when generalizing the findings.

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Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by ethics committee of Bu-Ali Sina University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

A.Y, M.A and S.M contributed to the study conception and design, material preparation, data collection and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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