Research Article

Investigating the prevalence of suicidal thoughts, frustration and mental health issues in high school students in Babol city in 2021

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Abstract

Background: Suicide is a major public health concern, especially among adolescents. This study investigated the prevalence of suicidal thoughts, frustration, and mental health problems among high school students in Babol, Iran.

Methods: A cross-sectional study involving 300 high school students in Babol, Iran, was conducted in June 2021. The participants completed a survey including demographic information, the Beck Hopelessness Scale (BHS), the General Health Questionnaire (GHQ-28), and the Beck Scale for Suicide Ideation (BSSI). Data analysis was performed via SPSS software version 24, with $p<0.05$ considered significant.

Results: Most of the students (82%) had favorable overall mental health status, with 98.3% reporting good physical health, 92.7% reporting low anxiety levels, 97.3% reporting good sleep quality, and 96.7% reporting positive social functioning. However, 18% of the participants had an unfavorable mental health status. Compared with boys, girls scored significantly higher in terms of physical symptoms, anxiety, sleep disturbance, and social dysfunction ($p<0.001$).Compared with those from two-parent households, students from single-parent households had higher scores for social functioning and anxiety ($p<0.05$). The level and intensity of frustration in the moderate to severe range among single parents are greater than those among those who live with both parents ($p = 0.04$).

Conclusion: The findings of this research emphasize the necessity of interventions and support services appropriate for mental health in the family and school environments to meet the needs of mental health, including suicidal thoughts and despair, of adolescents in Babol city.

Keywords: Suicide, Frustration, Health Status, High School Students.

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Introduction

Suicide continues to be a significant public health problem worldwide and is described as a deliberate act of taking one's own life(1). This tragic occurrence manifests in various methods, such as hanging, drug overdose, self-immolation, and firearms, and has lasting impacts on society, families, and those left behind(2) .

More than 703,000 individuals lose their lives to suicide each year(3). Suicidal behaviors, including thoughts, attempts, and completed suicides, have profound and enduring effects on individuals, families, and communities(4).

Young people between the ages of 12 and 20 are parti cularly vulnerable to suicidal ideation, and approximately one-third of teenagers in this age range experience such thoughts(5). Surprisingly, suicide is the fourth leading cause of death among 15–19 year olds worldwide(3).

Adolescence is a critical period of physical, psychological, and social change. High school-aged youth often face academic pressure, peer relationships, and self-change, which can impact their mental well-being (5, 6).

Studies have revealed that feelings of hopelessness and psychological distress are common indicators of suicidal ideation in this age group, and that these feelings are closely related to their engagement (7, 8).

In a study by Moosivand, hopelessness was identified as a mediator in the relationship between psychological stress, failure, and suicidal ideation(9).

Research on suicidal ideation among Iranian adolescents reveals varying prevalence rates. A meta-analysis revealed that 21% of high school students in Iran experienced suicidal ideation (5). Another study reported a 4.1% prevalence among high school students in Tabriz (10).

In adolescents, hopelessness can manifest itself through a variety of cognitive, emotional, and behavioral symptoms that have a significant impact on mental health and overall well-being. From a behavioral perspective, hopelessness in adolescents can lead to social isolation, poor academic performance, and loss of interest in activities once (11)they enjoy them.

Suicide and hopelessness can be influenced by a combination of biological, psychological, social, and cultural factors. Biological factors include genetics, neurochemical imbalances, and structural brain abnormalities. Psychological factors include mental illnesses such as depression, anxiety, and addiction. Social factors include experiences such as loneliness, family conflict, and peer relationships. Culture includes social expectations, culture, and religious beliefs (12, 13).

Prior research has stressed the importance of addressing mental health concerns among high school students as a preventive measure against suicide(14) . Anxiety and depression, ranging from mild to severe, can heighten the risk of suicide, underscoring the need to offer assistance and resources to those in need (15).

The World Health Organization aims to decrease the suicide rate by 2030 (3). A recent survey revealed high levels of suicidal thoughts, plans, and attempts among high school students in predominantly Muslim countries, with regional differences. Southeast Asia has the highest rates of suicidal ideation, whereas Eastern Mediterranean countries have the highest rates of suicide attempts (16). Despite the lower rates of completed suicides than the global average, there has been a troubling increase in suicide attempts among Iranian adolescents aged 10-19 years in recent years (17). Suicide is against Iranian cultural values and has detrimental impacts on those who remain (18). Research on the prevalence of suicidal thoughts, hopelessness, and mental health among high school students in Iran is limited because of the sensitive nature of the topic and specific policies related to collecting data from adolescents (19, 20). The stigma surrounding mental health and suicide in Iranian culture can hinder open discussions and the implementation of effective preventive measures (21).

Understanding suicide rates and feelings of hopelessness in adolescents is crucial for assessing society's well-being and mental health promotion

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efforts (6). The purpose of this study was to investigate the prevalence of suicidal ideation, hopelessness, and psychological problems among high school students in Babol. These results are expected to enhance our knowledge of adolescent mental health and address the need for prevention strategies, and school-based mental health programs.

Methods

Study design and participants

A school-based cross-sectional design was conducted in June 2021 in Babol, Iran. The aim of this study was to assess the prevalence of disappointment and suicidal ideation among Babol high school students. Written consent was obtained from the students who participated in the study.

Setting and sampling

The target population consists of 300 students aged 14–18 years from the first to third grades of Babol high schools. The sample size was determined via the Krejci Morgan table. The study utilized multistage sampling to choose the participants. Initially .

The target group included 300 students aged 14–18 from grades 1–3 of Babol Secondary School. The total sample size of the study was determined to be 300. In the first stage, the secondary schools were divided into two groups, boys and girls, and then two secondary schools were randomly selected from each group. Each school had 300 students. Therefore, in the second stage, 150 students were randomly selected from the same school to select participants from each secondary school. To ensure that the selected sample size was representative of the entire community, 50 students were randomly selected from each grade during sampling in Schools A and B.

This research was conducted in compliance with ethical principles such as obtaining informed consent, and maintaining the confidentiality and privacy of the participants. Each participant was instructed to write a unique 5-digit code on the questionnaire and keep it. This action was taken to facilitate the tracking of any problems that may arise with the students. Codes indicating suicidal ideation were reported to schools, and students were advised to voluntarily seek treatment. All the students provided written consent to participate in the study.

Following training on the questionnaire, the students were asked to complete it. To maintain confidentiality, each sample was instructed to write a unique 5-digit code on the questionnaire and keep it safe. This measure was intended to facilitate tracking of any issues that may arise with the students. Codes indicating suicidal thoughts were reported to the schools, and the students were encouraged to seek therapy voluntarily.

The Study Instrument

The data collection tools used in the study included the Beck Hopelessness Scale (BHS), the General Health Questionnaire (GHQ-28), the Beck Scale for Suicide Ideation (BSSI), and demographic information such as age, sex, overall health, number of parents, and living location.

Beck's Hopelessness Scale (BHS)

The BHS was developed by Becket et al. The instrument provides a way to assess and describe a person's level of hope based on responses to 20 questions. This scale evaluates three aspects of hopelessness: an individual's feelings about the future, loss of motivation and expectations during the last seven days. All the items are scored on a true–false rating scale. After the negative words were recoded, the number of positive items was added to the total score. Higher scores indicate increased levels of disappointment (22). The participants were divided into the following groups: no hopelessness (scores of 0–3), mild hopelessness (scores of 4–8), moderate hopelessness (scores of 9–14) and severe hopelessness (scores of 15–20) (23). The Persian version of this instrument has been shown to be both reliable (with a Cronbach's alpha of 0.75) and valid for assessing feelings of hopelessness in the Iranian population (24).

General Health Questionnaire (GHQ-28)

The GHQ-28, developed by Goldberg in 1978, is a widely used self-administered questionnaire to identify individuals at risk for mental disorders (25).

The mental health questionnaire consists of 28 items that evaluate mental well-being in the past month across four areas, each of which consists of seven items: somatic symptoms (items 1–7), anxiety/sleeplessness (items 8–14), difficulties in social interactions (items 15–21), and major depression (items 22–28) (26).

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The validity and reliability of the GHQ-28 have been confirmed in several independent studies conducted in Iran (27, 28). Scores are determined via the Likert scoring system (0, 1, 2, 3), with a total score ranging from 0–84 (29). A lower score on the assessment indicates better mental health. The cutoff score for identifying potential mental health problems ranges from 22–24 points, depending on the population. The optimal clinical cutoff point for screening general health in the Iranian population was reported as 24 points via the Likert scoring system, and the cutoff point for each subitem was set at 14 points (29, 30).

Beck's scale for suicide ideation (BSSI)

The BSSI is utilized to evaluate the severity of suicidal ideation, helping to identify individuals at risk for suicide. The BSSI was developed by Aaron Beck in 1961, and consists of 19 questions that evaluate different aspects related to suicidal ideation and behaviors. These aspects include the desire for death, thoughts of suicide (both active and passive), the frequency and duration of suicidal thoughts, self-control, protective factors against suicide, and the desire to engage in suicidal behaviors (22). Each question provides three options for assessing suicidal intensity on a scale of 0–2. The total score ranges from 0–38, with scores ranging from 0–3 indicating no suicidal thoughts, 4--11 indicating low-risk suicidal thoughts, and 12--38 indicating high-risk suicidal thoughts. The BSSI has five initial screening questions, with three focusing on the wish to live or die and two on the desire to attempt suicide. If a respondent shows any inclination toward suicide, 14 additional questions are asked. The BSSI typically takes approximately 10 minutes to complete (31, 32). The validity and reliability of the English version of the questionnaire has been consistently confirmed, with an alpha coefficient greater than 0.89 (33). The questionnaire has also been validated in Iran (31, 32, 34).

Data analysis

Data analysis was performed via SPSS software version 24. Descriptive statistics such as gender, age group, place of residence, number of parents and levels of suicidal ideation risk variables, nominal levels and levels of public health variables were reported via frequency percentage indices to report the distributions of qualitative variables. Independent t tests were used to compare the means of quantitative variables between groups. $P<0.05$ was considered significant. We considered $P<0.05$ to indicate statistical significance.

Results

Demographic characteristics

The sample analyzed consisted of 300 high school students ranging in age from 13–19 years, with an even split between genders: 50% were girls (150 individuals), and 50% were boys (150 individuals). The majority of participants, 77% (N=231), resided in urban areas, whereas the remaining 23% (N=69) lived in rural areas. In terms of age breakdown, 42.3% (N=127) were in the 15–17 age group, and 57.7% (N=173) fell within the 18–19 age range.

Table1: Table 1. The characteristics of participants in the study

Variable		Frequency
gender	girl	**150 (%50)**
	boy	**150 (%50)**
Living location	Urban	**231 (%77)**
	Village	**69 (%23)**
parents	single parents	**50 (%16.7)**
	two-parent	**250 (%83.3)**
age	15 - 17	**127 (%42.3)**
	18-19	**173 (%57.7)**

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General health assessment (GHQ)

The results of the examination scores of the dimensions of general health (GHQ) indicated that the majority of the students had positive ratings in different aspects pertaining to their health. Specifically, 98.3 percent (N=295) were in good physical shape, 92.7 percent (N=287) had low anxiety levels, 97.3 percent (N=292) reported good sleep quality, and 96.7 percent (N=290) had positive overall well-being. Only 18% (N=54) of the participants had a negative health status (Table 2).

Table 2 presents data regarding the scores for the GHQ-28 and its subscales.

General health	under cutoff point	Above cutoff point
Somatic symptoms	**295 (98.3%)**	**5 (1.7%)**
Anxiety	**278 (92.7%)**	**22 (7.3%)**
sleep dysfunction	**292 (97.3%)**	**8 (2.7%)**
Social dysfunction	**290 (96.7%)**	**10 (3.3%)**
GHQ-28 total score	**276 (0.82%)**	**54 (0.18%)**

Table 3 shows the results of the independent t test, which was used to investigate the relationships between the dimension of general health (GHQ) and the variables of sex, age, living location and number of parents.

Table 3 shows that the physical, anxiety, sleep and social subgroup scores of girls were significantly greater than those of boys. ($p>0.001$).

According to the results of the general health status questionnaire, the scores of single-parent students in the subscales of social functioning and anxiety symptoms were significantly higher than those of two-parent students ($p < 0.05$). However, the two groups did not significantly differ in the scores for the subscales of physical symptoms and sleep disorders ($p>0.05$).

No statistically significant difference was detected in the analysis of the relationships between age groups (15–17 years old and 18–19 years old) and the physical symptoms, sleep disorders, social functioning disorders, and anxiety symptoms of the age groups. Similarly, no correlation was detected between the scores of the subscales and city or village residency ($p<0.05$) (Table 3).

According to an independent t analysis, girls scored significantly higher than boys did in terms of physical symptoms, anxiety symptoms, sleep disorders, and social dysfunction ($p>0.001$). Additionally, students from single-parent households had higher scores for social functioning and anxiety symptoms than students from two-parent households did ($p<0.05$). However, there was no statistically significant difference in physical symptoms or sleep disturbances between the two groups ($p>0.05$) (Table 3).

Table 3. Investigating the associations between overall well-being (GHQ) and its subcomponents with gender, age, living location, and parental status.

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Variables		Somatic Mean±SD	Anxiety Mean±SD	sleep Mean±SD	Social Mean±SD	Total Mean±SD
Gender	female	6.4±99.40	9.6±39.04	8.4±86.58	8.4±36.28	33.16±25.80
	male	**3.3±84.72**	**4.4±53.83**	**4.4±67.28**	**5.3±81.43**	18.13±84.76
Pvalue*		<0.001	<0.001	<0.001	<0.001	<0.001
Parents	single parents	**6.5±8.03**	**8.6±94.85**	**7.5±78.35**	**8.4±50.23**	31.19±30.39
	two-parent	5.4±28.22	6.5±35.85	6.4±56.79	6.3±80.99	24.16±99.25
Pvalue*		**0.238**	**0.006**	**0.108**	**0.007**	0.016
Living location	Urban	5.4±61.60	6.6±83.05	4.4±94.94	7.4±28.11	26.17±67.32
	village	**4.3±74.39**	**6.6±62.25**	**6.4±16.76**	**6.3±43.93**	23.15±96.54
Pvalue*		0.144	0.804	0.244	0.133	0.244
Age	15 - 17	**4.4±98.35**	**6.6±77.29**	**6.4±67.73**	**7.3± 07.49**	25.16± 50.47
	18-19	4.5±73.36	6.5±79.96	6.5±83.03	7.4±09.47	26.17±45.32
Pvalue*		**0.633**	**0.964**	**0.776**	**0.964**	0.633

P<0.05 * is significant

According to the results in Table 4, no statistically significant relationships were found between age groups and the risk of committing suicide, or between the place of residence and the risk of committing suicide (p<0.05). There was a significant relationship between sex and the risk of committing suicide. The risk of severe suicide was greater for single-parent students than for two-parent students. (p=0.01). The risk of severe suicide was greater in (girls than in boys. (p=0.001

The research revealed that 77% of the participants resided in urban areas, whereas 23% lived in rural areas. Interestingly, there was no significant disparity in suicide risk between urban and rural students.

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Table 4. Investigating the risk of committing suicide on the basis of demographic variables

Variables		Weak No. (%)	Average No. (%)	Intense No. (%)	Pvalue*
Age	15 - 17	44(34.6)	44(37.8)	35 (27.6)	0/47
	18-19	72(41.6)	58(33.5)	43(24.9)	
Gender	female	58(38.7)	40(20.7)	(34.7) 52	0/001
	male	58(38.7)	66(44)	26 (17.3)	
Number of parents	single parents	17 (0.34)	12 (0.24)	21(0.42)	0/01
	two-parent	99(39.6)	94(37.6)	57(22.8)	
living location	Urban	86(37.2)	81(35.1)	64(27.7)	0/43
	village	30 (43.5)	25(36.2)	14(20.3)	

According to Table 5, the level of hopelessness at moderate and severe levels is higher in those aged 18-19 years (p=0.004), and it is higher in girls than boys (p=0.005).

There is also a significant relationship between the number of parents and the level and intensity of hopelessness, such that the level and intensity of frustration in the moderate to severe range among single parents are greater than those among those who live with both parents. (p = 0.04)

City and village residents also did not significantly differ in terms of the amount and severity of despair compared with each other (p=0.06).

Table 5. Examining Beck's disappointment level on the basis of demographic variables

Disappointment Variables		Weak No. (%)	to some extent No. (%)	Average No. (%)	severe No. (%)	Pvalue*
Age	15 - 17	50(39.4)	24(18.9)	39(30.7)	14(11)	0/004
	18-19	**85(49.1)**	**49(28.3)**	**30(17.3)**	**9(5.2)**	
Gender	female	67(44.7)	26(17.3)	40(26.7)	17(11.3)	0/005
	male	**68(45.3)**	**47(31.3)**	**29(19.3)**	**6(4.1)**	
Number of parents	single parents	16(32)	13(26)	13(26)	8(16)	0/04
	two-parent	**119(47.6)**	**60(24)**	**56(22.4)**	**15(6)**	
living location	urban	106(45.9)	61(26.4)	45(19.5)	19(8.2)	0/06
	village	**29 (42)**	**12 (17.4)**	**24 (34.8)**	**4 (5.8)**	

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Discussion

The current research aimed to examine the frequency of feelings of hopelessness and thoughts of suicide among high school students in the city of Babol. The results indicated that a large portion of the students surveyed reported being in good overall health. However, 18% of the participants reported being in poor general health and experiencing mental health issues.

The results highlight the need for comprehensive mental health programs tailored to the specific needs of high school students. While most students reported good health, the presence of a significant minority with poor health underscores the necessity for targeted interventions. Importantly, the absence of serious mental health problems does not mean that all challenges have been resolved. Some findings have indicated that engaging in risky behaviors such as heavy drinking and sexual activity is correlated with feelings of sadness, hopelessness, and poor mental health(8). These subtle yet important mental health issues require ongoing attention and support.

Our study revealed that girls were more likely to experience physical problems, anxiety, sleep disturbances, and social challenges than boys were. They also displayed a greater likelihood of experiencing suicidal ideation. These findings align with those of similar studies conducted in other locations. For example, Butler's study on students' mental health revealed that approximately 26.5% of respondents had poor mental health, with a higher prevalence among women than men (35). In Rasht, a city in northern Iran, a high prevalence of mental health problems, including stress, anxiety, and depression, was reported among female students, ranging from moderate to severe(36).

Similarly, a previous study in the Greater Accra Region of Ghana highlighted the importance of addressing and preventing suicide among high school students. Stress has been identified as a contributing factor to the increase in suicidal behaviors among students, particularly with girls in particular having higher rates of suicidal ideation than boys do. Additionally, parental support has been identified as a factor that reduces the likelihood of suicidal ideation in this demographic group(37). Therefore, it seems that considering gender is important when evaluating mental health in this population.

Another significant finding in the present study is the link between family structure and mental health outcomes. Students in single-parent families are more likely to experience physical illness, anxiety, sleep disturbances, and social difficulties. They are also at higher risk for suicidal ideation compared to students in two-parent families.

The research has shown that the family environment and relationships can impact mental health, and dysfunctional family life can potentially lead to anxiety and depression .(38) Other studies have found that factors such as growing up in a single-parent home, parental divorce, lack of parental support during childhood and adolescence, and exposure to alcohol abuse can increase the likelihood of suicidal thoughts and behaviors, especially in boys (39). A study by McCauley found that those who had less parental support during childhood and adolescence were more likely to experience suicidal thoughts occasionally and frequently than those who had strong parental support (40). Similarly, Lee found that adolescents in stepfamilies were at higher risk for expressing thoughts of suicide and attempting suicide. This highlights the importance of a caring and supportive family environment in preventing suicidal behavior in adolescents(41) .

Various factors, including family dynamics, school climate, sexual orientation, and financial status, can influence adolescent suicidal thoughts. Families can help prevent adolescent suicide by promptly recognizing and intervening.(11)

Research has indicated that people aged 18–19 years, particularly girls, and those from single parents are likely to experience moderate to severe feelings of hopelessness. These feelings can have serious mental health consequences, particularly among vulnerable populations.(42) Han reported that approximately 20% of Chinese adolescents experience feelings of hopelessness, with older teens, girls, those with low levels of parental education, those from single-parent homes, and those facing economic hardships being more vulnerable. His research also revealed that poor parent–child interaction may play a crucial role in predicting feelings of disappointment in adolescents (43).

Studies have shown that feelings of hopelessness can increase the likelihood of suicidal behavior,

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particularly in adolescent girls, who may face problems such as loneliness, rejection, guilt, and conflicts with their parents (5). Aranda emphasized the significance of family instability and financial struggles in the development of suicidal behavior among teenagers attending both public and private high schools. Studies have shown that financial difficulties and unstable family situations can lead to feelings of hopelessness and suicidal ideation among students in public schools, particularly affecting girls from small families or households with unemployed parents (11).

Feelings of hopelessness can lead to serious risks of suicide. The family environment, which serves as a vital center for adolescent growth and learning, plays a pivotal role in shaping adolescent behavior and development. Adolescents who grow up in a negative family environment are more likely to experience behavioral problems as they grow up(42).

Therefore, the increased risk of severe suicidal feelings and hopelessness identified among girls and single-parent students in the current study is consistent with the results of previous research. Scientists have emphasized the importance of family support and gender-based interventions to address these vulnerabilities.

Limitations

The sample size was relatively small, and it was limited to a specific area and may not be representative of all students in Iran, which may impact the applicability of the results to a broader population. To increase the generalizability of the results, expanding the study to other geographical areas of Iran and investigating potential differences between different regions are recommended.

The study focused on the prevalence of suicidal thoughts and hopelessness but did not fully examine the risk and protective factors associated with these issues. The individual, familial, and social factors that affect the mental health of students should also be investigated.

Investigating the risk and protective factors of adolescent mental health can also offer valuable insights for developing targeted interventions.

Suggestions for future research

Future research should examine the effect of supportive, and educational interventions on at-risk groups in order to identify the best practices to reduce depression and suicidal thoughts. Also, conducting comparative studies between different regions of Iran can help to identify the specific needs of each region.

Examining the role of social and economic factors in the mental health of adolescents can help to better understand the existing challenges and provide more effective solutions.

Conducting longitudinal studies to track changes in the mental health status of adolescents and the effect of various interventions on this situation can provide valuable insights.

According to these suggestions, future research can strengthen the scientific and practical foundations to support the mental health of adolescents and facilitate the improvement of their quality of life.

Implications for Clinical Practice

The findings of this research can help policymakers to design effective support programs for families, especially single-parent families and teenage girls. Also, creating awareness campaigns about mental health and the importance of social support can help increase public awareness. These campaigns can include information about the symptoms of depression and how to get help

Due to the high vulnerability of girls and teenagers from single-parent families to depression and suicidal thoughts, early interventions are necessary to identify and support these groups. These interventions can include psychological and educational counseling.

Schools should act as places to identify and support students at risk. Creating training programs for teachers on identifying psychological problems and providing early support can be effective.

Conclusions

In conclusion, studying the prevalence of suicidal thoughts, frustration, and mental health issues among high school students in Babol highlights the crucial impact of family and social factors on adolescents' psychological well-being. The findings underscore the need for family support initiatives in Iran to address the mental health struggles faced by young people. Early interventions play a key role in assisting single-parent families and girls in navigating obstacles and enhancing their mental well-being. Notably, female students and those from single-parent households are more susceptible to experiencing significant levels of depression and suicidal ideation. This bolsters the importance of timely screening procedures and the establishment of

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mental health assistance programs tailored to these at-risk groups, particularly adolescent girls.

Declarations:

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Authors contribution:

All the authors have made substantial contributions to the development and completion of this article:

RH conceived and designed the experiments, analyzed and interpreted the data, materials, contributed reagents, materials, analysis tools or data, wrote the paper.

MEH, FK, HG Collected, Analyzed and interpreted the data, wrote the paper,

Fatemeh Al-Sadat Akbari FSA conceived and designed the experiments, analyzed and interpreted the data, materials, contributed reagents, materials, analysis tools or data, wrote the paper.

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