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Health Professions Students' Attitudes toward Their Field of Study and Future Career: A Systematic Review

Mohammad Vahedian-Shahroodi[1], Fatemeh Behzad[2], Maryam Ajilian Abbasi[3], *Fatemeh Bahrani fard[4]

[1]Professor, Department of Health Education and Health Promotion, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran.

[2]MSc in Health Education and Health Promotion, Mashhad University of Medical Sciences, Mashhad, Iran.
[3]MSc in Clinical Psychology, Mashhad University of Medical Sciences, Mashhad, Iran.

[4]MSc in General Psychology, Bushehr University of Medical Sciences, Bushehr, Iran.

Abstract

Background: The increasing number of medical sciences graduates is one of the problems in society, and there are concerns among them about their fields and future careers. This study aims to review the attitude of Iranian health professions students toward their field of study and future careers.

Materials and Methods: In this systematic review, a search was conducted of online databases (Medline, EMBASE, Scopus, Web of Science, PsycINFO, ERIC, SID, CIVILICA, and Google Scholar search engine) for relevant studies up to December 2023. The quality of the selected studies was evaluated using the STROBE checklist.

Results: A total of 27 studies were included (with 4805 individuals). The highest level of satisfaction with the field of study was related to dental and medical students, and the lowest interest was related to health and paramedical students ($p<0.05$). Among the health profession students, the environmental health and healthcare management students had the most negative attitude towards their field of study, and public health students had the most negative attitude towards their future career than other health students. There was a significant correlation between students' attitudes toward their field of study and their attitudes toward future careers ($p<0.05$).

Conclusion: Health professions students, especially environmental health and healthcare management students, had a negative attitude toward their field of study, and public health students had a negative attitude toward their future careers. Therefore, standard evaluations and proper planning should be carried out based on the future vision for the acceptance of these fields in universities, as well as empowering health profession students in entrepreneurship to create self-employment.

Key Words: Attitude, Health Sciences, Field of Study, Future Career, Students.

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Corresponding Author:

Fatemeh Bahrani fard, Bushehr University of Medical Sciences, Bushehr, Iran.

Email: fatmhbahrani@gmail.com

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1- INTRODUCTION

It is widely recognized that health professionals play an essential role in achieving, maintaining, and progressing toward universal health coverage (1). Therefore, every effort is needed to ensure their availability, equitable distribution, and satisfaction to ensure efficient delivery of health care. Improvements in health care service delivery and coverage and enjoyment of standard health care as a right depend on availability, health team composition, quality, and access to a motivated workforce (2). Preserving and promoting the health of society requires that students of health professions choose their field of study out of interest.

The lack of knowledge and interest in the field of study leads to a mismatch between people's future jobs and their needs and expectations, and the negative consequences affect the educational and health systems (3, 4). If the field of study is not interesting to students, studying and working in that field will be frustrating and even impossible (5, 6). The knowledge of and interest in the field of study brings a sense of responsibility, and this, in turn, will increase the efficiency of people in providing health services (7).

Success in work and reaching a goal requires a positive attitude towards that action or goal, and job motivation is essential to maintain useful and efficient employment (8). In general, the combination of knowledge, feelings, and readiness to act toward a problem constitute a person's attitude toward that problem (9). Knowing the attitude of students toward their careers and fields of study can be useful for predicting social behavior and interpreting it after its occurrence. The university is the source of society's transformations in various fields, and the students, as the main pillars of the university, will form the main body of various organizations and organs of society in the future. Thus, considering the importance of health professions, knowing the attitude of students of these fields towards their field of study and career is of particular importance (10), as a positive attitude toward the career future will bring career motivation and, later, career success (11). In Iran and other countries, various studies have been conducted on the level of interest and attitude of students of medical sciences toward their field, especially medicine (12-19), dentistry (20), pharmaceuticals (21, 22), nursing (23-31), and midwifery (32, 33). However, studies on the level of interest of students in health professions are scarce, and the results of the studies are contradictory, while health workers, after nurses, constitute the majority of the country's health and treatment personnel.

Research on the attitude of students of environmental and occupational health at Qazvin University of Medical Sciences showed that the majority of environmental health students did not have a favorable attitude toward their field of study and career, while the attitude of occupational health students was close to acceptable (34). In a study conducted at Guilan University of Medical Sciences, it was found that environmental health students had a positive attitude towards their field of study and their future careers (35).

Another research in Golestan University of Medical Sciences found that the attitude of paramedical and health students towards their field of study was unfavorable (36). The results of another study in Arak Health Faculty showed that 75.6% of students had a positive attitude toward their future careers (37). Another research with the aim of determining the attitude of health students of Tabriz University of Medical Sciences towards their field of study and career future showed that the attitude of students, especially in the field of environmental health, was negative toward their field of study and career future (38). In another study in Zanjan, the

highest level of satisfaction with the field of study was related to public health students (39). Every year, due to dissatisfaction with the field of study or concern about the future of employment, many students lose interest in studying or withdraw from continuing their studies (40). If the educational system fails to diagnose and take the necessary measures, in the future, society will face a shortage of specialists accompanied by a waste of financial resources on enrolling and training these forces (41). It is necessary to analyze the attitude of students of health professions, who have a great impact on the health of society, toward their academic field and future career, and the results should be used to improve health sciences or revise educational programs or student selection (42). This study was conducted to review the attitude of Iranian health professions students toward their field of study and future careers and the determining factors.

2- MATERIALS AND METHODS

The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist was used as a template for this review (43).

2-1. Data sources

A systematic search of electronic databases Medline (via PubMed), Scopus, Web of Science, EMBASE, PsycINFO, ERIC, CIVILICA, SID, and Google Scholar search engine was performed with no time limit up to December 10, 2023. The search was conducted using the following English and Persian keywords and MeSH terms combined adequately with Boolean operators (OR, AND, NOT): Attitude, Field of Study, Future Career, Medical Students, Health Students, Health Sciences Students, Health Profession Students, Environmental Health Students, Occupational Health Students, Public Health Students, Healthcare Management, Health-Treatment Services Management, Health Services Management, Family Health Students, and Disease Control Students, Determining Factors, and Related Factors.

2-2. Eligibility criteria

The participants, interventions, comparators, and outcomes (PICO) scale was used to formulate the review objective and inclusion criteria (44).

Participants: Iranian university students (Health Professions Students at BSc educational level).

Interventions and Comparators: The included studies were non-interventional, so no intervention or comparison group existed.

Outcomes: Students' attitude toward their field of study and future careers.

2-3. Inclusion criteria

- Original research studies
- Studies that focused on the field of study and future career and the determinants among health professions students
- Respondents were health professions students at the BSc level
- Studies published in English or Persian
- Studies published up to December 2023.

2-4. Exclusion Criteria

- Studies that did not meet the predefined inclusion criteria
- Non-original research studies
- Studies not focused on health professions students' field of study and future career
- Studies with respondents other than BSc-level health professions students
- Studies published in languages other than English or Persian
- Studies published before the specified date.

2-5. Study selection

A database search was done for suitable studies, abstracts of the studies were screened for identification of eligible studies, full-text articles were obtained and assessed, and a final list of eligible studies was made. This process was done independently and in duplication by two reviewers, and any disagreements were resolved via discussion.

2-6. Data collection process

Each reviewer used a data extraction form developed by the authors that recorded the article authors, the year of study, the setting, the respondents, sample size, study design, and main findings, and extracted data for this review independently.

2-7. Risk of bias

The quality of the included studies was evaluated using the modified STROBE (STrengthening the Reporting of Observational Studies in Epidemiology) checklist. The modified STROBE is a valuable tool for evaluating the quality of observational studies. This checklist has 11 items, and a maximum of one point is allocated to each methodological element. The final score of the checklist varies from 0 to 11, with scores categorized into high quality (8-11 points), moderate quality (4-7 points), and low quality (0-3 points), providing a systematic and objective approach to assessing the methodological rigor of the included research studies (45).

2-8. Synthesis of results

Due to the difference in the included studies, study designs, students' field and level, the type of questionnaire used, and different reported outcomes (percentage or mean and standard deviation), a meta-analysis was not conducted.

3- RESULTS

A total of 27 studies (n=4,805 individuals, from 1996 to 2022) met the inclusion criteria for a review of the attitude toward the field of study and future careers among health science students. The highest level of satisfaction with the field of study was related to dental and medical students, and the lowest level of satisfaction was related to health and paramedical students. Results indicated that in recent years, the negative attitude of health profession students toward their field of study and future careers has increased.

The most negative attitude toward the field of study was related to environmental health and healthcare management students. Public health students had the most negative attitude toward their career future. A possible reason can be a lack of knowledge and information about entrepreneurship skills. The general characteristics of the selected studies are summarized in **Table 1** and **Table 2** and as follows:

Table-1: General characteristics of the included studies (n=27).

Authors, Study year, Reference	Setting	Population	Sample size	Concept studied	Study design	Main results	Quality assessment*
Karami et al., 2005, 46	Ahwaz Jundishapur Medical Sciences University	health students	281	students' interest in their fields and the factors affecting it	cross-sectional study	12.5% of the students had little interest in their field due to concerns about their future career prospects.	moderate
Samadi et al., 2008, 47	Hamedan University of Medical Sciences	environmental health students	96	attitude toward their discipline and future career prospects	cross-sectional study	The students' attitude toward their future career prospects was lower than the acceptable level, while most of the students had an acceptable attitude	moderate

						toward their field of study.	
Rejali et al., 2008, 42	Isfahan University of Medical Sciences	health students	318	attitude toward their field of study and future career prospects	cross–sectional study	The majority of the students had positive perspectives toward their future careers and fields of study.	moderate
Mehrabian et al., 2012, 35	Guilan University of Medical Sciences	environmental health students	105	attitude toward their field of study and future career prospects	cross-sectional-study	Students had a positive attitude toward their field of study.	moderate
Taherpour et al., 2013, 48	North Khorasan University of Medical Sciences	public health, environmental health and occupational health	90	attitudes toward job prospects and influencing factors	cross-sectional study	The lowest and the highest mean scores were related to environmental health (9.21 ± 5.89), and occupational health students (67.96 ± 10.64).	moderate
Jamali et al., 2013, 17	Qazvin University of Medical Sciences	environmental and occupational health	156	attitude toward their field of study and future career prospects	cross-sectional study	The mean scores of environmental students' attitudes toward their future career prospects were low (50.7 ± 9.7 out of 85).	moderate
Mobarak Abadi et al. 2013, 37	Arak University of Medical Sciences	health students	220	attitude toward their field of study and future career prospects	cross–sectional study	Students had a positive attitude toward their field of study and future career prospects.	moderate
Faraji Khiavi et al., 2014, 49	Ahvaz Jundishapur University of Medical Sciences	health students	242	expectation of their academic field and attitude toward future career prospects	descriptive-analytical study	68.6% of participants had high expectations corresponding to their academic field, and 79.3% of students had hopeful and positive attitudes toward their future career prospects.	moderate
Vahabi et al., 2014-15, 50	Kurdistan University of Medical Sciences	public health students	110	attitude toward their field of study and future career prospects	cross-sectional study	The students' attitudes toward their field of study and future career prospects were negative.	moderate
Khammarnia et al., 2015, 51	Zahedan University of Medical Sciences	health and epidemiology students	160	attitude toward their field of study and future career prospects	cross - sectional study	The mean scores of students' attitudes toward their discipline and future career prospects were 27.14 ± 6.15 (range 9-40), and 19.78 ± 3.71 (range 7-28).	moderate
Moghaddasi et al., 2015, 52	Shahid Sadoughi University of Medical Sciences	environmental health students	102	attitude toward their field of study and future career prospects	analytical, descriptive study	Students of environmental health had a positive perspective toward their future careers and fields of study.	moderate
Abedinipoor et al., 2015, 12	Qom University of Medical Sciences	medical sciences students	313	attitude toward their discipline and its association with academic performance	descriptive and analytical study	The most negative attitude was among the students of health compared to other disciplines ($p<0.001$).	moderate
Khani Moghadam et al., 2015, 53	Ardabil University of Medical Sciences	environmental health and occupational health students	100	attitude toward their field of study and future career prospects	cross-sectional study	Students had a positive attitude toward their education and future career prospects.	moderate
Karami et al., 2016, 54	Semnan University of Medical Sciences	health students	83	attitude toward their field of study and future career prospects	cross-sectional study	The majority of students indicated concerns about their future career prospects.	moderate

Hasanloo et al., 2016, 55	Zanjan University of Medical Sciences	medical sciences students	384	attitude toward their field of study and future career prospects	cross – sectional study	There was a negative attitude toward their field of study and future career prospects.	moderate
Adib-Hajbaghery et al., 2017, 56	Kashan University of Medical Sciences	medical sciences students	540	the students' interest in their field of study and influencing factors	cross-sectional study	The lowest level of interest in the field of study was related to students of laboratory sciences, health sciences, midwifery, and health information technology.	moderate
Safari et al., 2018, 57	Zahedan University of Medical Sciences	medical sciences students	210	students' interest in their field of study and the factors influencing it	descriptive-analytical study	The highest level of interest was among medical and dental students, and the lowest level of interest was among paramedical and health students ($p<0.05$).	moderate
Mokhtari Kia et al., 2018, 58	Lorestan University of Medical Sciences	public health students	78	attitude toward their field of study and future career prospects	cross-sectional study	The attitudes of students toward their future career prospects and fields of study were negative.	moderate
Gilani et al., 2018-19, 38	Tabriz University of Medical Sciences	public health, environmental health engineering, and occupational health students	90	attitude toward their field of study and future career prospects	cross-sectional study	The view of environmental health engineering students was more negative than that of other students.	moderate
Rajabi et al., 2020, 59	Shiraz University of Medical Sciences	environmental health students	120	attitude toward their field of study and future career prospects	cross-sectional, study	The majority of students had an unfavorable perception of entering their field.	moderate
Navidjouy et al., 2021, 60	Urmia University of Medical Sciences	medical sciences students (public health, environmental health, radiology, anesthesia, and laboratory sciences)	200	attitude toward their field of study and future career prospects	cross-sectional study	The attitudes of students in some fields, including public health, environmental health, radiology, anesthesia, and laboratory sciences, toward their field of study and future career prospects were lower than those of other disciplines.	moderate
Arbabi et al., 2022, 61	Ardabil University of Medical Sciences	graduates of the faculty of health	340	employment status and attitudes toward and satisfaction with the place of study and field of health graduates	cross-sectional study	The status of graduates' employment and continuing education was not favorable, but their attitude and level of satisfaction with the place of study and field of study were good.	moderate
Salmanzadeh et al., 1996, 62	Iran University of Medical Sciences	undergraduate and graduate healthcare management	130	students' satisfaction with their field of study and future career prospects	cross-sectional study	The students' satisfaction with their field of study was low to moderate, and 31.8% of the students had a negative attitude toward their future career prospects.	moderate
Sanaei Nasab et al., 2010, 63	One of Tehran Universities of Medical Sciences	undergraduate healthcare management	89	Students' satisfaction level with their field of study and future career prospects	descriptive study	Only 42% of students were satisfied with their field of study, and 32% of students had a negative attitude toward their future career prospects.	moderate

Shamsaie et al., 2018, 64	Zabol University of Medical Sciences	graduates of healthcare management at Zabol University of Medical Sciences	100	to identify the employment status of graduates	descriptive longitudinal study	81.2% of the participants were satisfied with their jobs, but about a third of the graduates were unemployed.	moderate
Askari et al., 2018, 65	descriptive - analytic and cross - sectional study	graduates of healthcare management at Shahid Sadoughi University of Medical Sciences	108	to determine the career trajectory of graduates	cross-sectional study	25.01% of graduates were unemployed, and their attitude toward their field of study, the status of work and employment in society, and their entrepreneurial ability were moderate.	moderate
Bastani et al., 2019, 66	Shiraz University of Medical Sciences	undergraduate healthcare management	40	to assess the educational needs of bachelor's degree holders in healthcare management	cross - sectional study	30% of students had low satisfaction with their field of study. Additionally, 35% assessed the entrepreneurial ability of graduates in this field as low to moderate.	moderate

*STROB checklist.

1. A cross-sectional descriptive study at Ahwaz Jundishapur Medical Sciences University in 2005 investigated health faculty students' interest in their fields and influencing factors. The results revealed that 60% of students reported good to excellent interest in their field, while 40% had average interest, and 12.5% of students showed little interest due to dissatisfaction with professors' teaching methods and concerns about future career prospects. A significant relationship was found between students' interest level and their educational level ($p<0.05$), highlighting the variability in student engagement and underscoring the importance of teaching quality and career guidance in health professional education (46).

2. A cross-sectional study aimed to determine the attitude of environmental health students toward their discipline and future careers at Hamedan University of Medical Sciences in 2008. The mean and standard deviation of students' attitudes toward their future careers were 56.6 and 11.2, respectively, which was lower than the acceptable level. Most students had an acceptable attitude towards their field of study (47).

3. A descriptive cross-sectional study aimed to determine the attitude of health students towards their field of study and future careers at the health faculty of Isfahan University of Medical Sciences in 2008. The results showed that the mean score of the health students' attitudes toward their field of study was 61.25 ± 7.008, and toward their future careers was 62.54 ± 10.36, indicating that the majority of students had a good perspective toward their future careers and fields of study. The most important factors contributing to the positive attitude toward their future career included personal interests, serving society, the social status of health, and society's belief in the importance of health (42).

4. A cross-sectional descriptive study aimed to determine the attitude of environmental health students toward their fields and future careers at Guilan University of Medical Sciences in 2012. It was found that 70.5% of students were satisfied with choosing this field. The mean of environmental students' attitudes toward their fields and future careers was 38.5 (out of 51) and 6.7 (out of 16), respectively, showing the students' positive attitude toward their field of study (35).

5. A cross-sectional descriptive study aimed to determine the attitudes of health students of North Khorasan University of Medical Sciences toward their job prospects and effective factors in 2012–13. The results showed that the average score of students' attitudes was 65.8 ± 10.5 (out of 100). The lowest mean scores were related to environmental health students, while the highest mean scores were associated with occupational health students. A significant relationship was found between attitude and variables including academic average, gender, orientation, and social status ($p < 0.05$) (48).

6. A cross-sectional descriptive study aimed to determine the attitudes of environmental health and occupational health students toward their disciplines and future careers at Qazvin University of Medical Sciences in 2012-13. The mean score of environmental students' attitudes toward their future careers was 50.7±9.7 (out of 85), and the mean of occupational students' attitudes was 53.3±6.9. The mean score of the attitude of environmental health students toward their disciplines and future careers was lower than the acceptable level, demonstrating an unfavorable attitude toward future careers among these students (17).

7. A descriptive cross-sectional study aimed to determine the attitude of health students towards their field of study and their future careers at the health faculty of Arak University of Medical Sciences in 2013. The results showed that the mean score of students' attitudes toward their future careers was 20.07 ± 4.74 and toward their field of study was 17.92 ± 4.66, indicating a positive attitude among students. A significant correlation was observed between the attitude toward future careers and the attitude toward the field of study ($p<0.05$) (37).

8. A descriptive-analytical study aimed to assess the relationship between the expectations of the academic field and attitudes about future careers among health students at Ahvaz Jundishapur University of Medical Sciences in 2014. The results showed that 68.6% of participants had high expectations corresponding to their academic field, and 79.3% of students demonstrated hopeful and positive attitudes about their future careers. Furthermore, a significant correlation was found between students' expectations and their career attitudes, indicating these variables mutually influenced each other ($p<0.05$) (49).

9. A cross-sectional study aimed to determine the perspective of public health students at Kurdistan University of Medical Sciences about their field of study and future careers and the related factors in 2014-15. The results showed that 56.4% of students had a negative attitude towards their field of study, and 70% had a negative attitude towards their future careers. The mean score of students' perspectives about their field of study was 26.23 ± 5.84, and about their future careers was 24.57 ± 6.45 (on a scale ranging from 8 to 90), with lower scores indicating a more negative attitude. These mean scores represented a predominantly negative view toward their field of study and future careers (50).

10. A cross-sectional study aimed to determine the attitudes of health students of Zahedan University of Medical Sciences toward their discipline and future careers in 2015. The results showed that the mean score of students' attitudes toward their discipline was 27.14 ± 6.15 (range 9-40), and toward their future careers was 19.78 ± 3.71 (range 7-28). Environmental health students demonstrated the most negative attitude towards their field of study (25.97 ± 6.32) and future careers (18.64 ± 3.86). A statistically significant difference was found between the mean scores of future careers across different health fields

($p<0.05$), with future career prospects emerging as a negative factor in students' attitudes toward the health field (51).

11. An analytical descriptive study aimed to determine the attitude of environmental health students toward their fields and future careers at Shahid Sadoughi University of Medical Sciences in 2015. The results showed that the mean of environmental students' attitudes toward their fields was 3.16 and toward their future careers was 0.66, indicating that the students of environmental health had a good perspective toward their future careers and fields of study (52).

12. A descriptive-analytical study aimed to determine the attitudes of students toward their discipline and its association with academic failure at Qom University of Medical Sciences in 2015. The results showed that the most positive attitude was related to the disciplines of medicine and dentistry, whereas the most negative attitude was toward the field of health ($p<0.001$). Several factors of academic failure had a relationship with the total score of attitude, with a more positive attitude corresponding to lower academic failure ($r=0.33$, $p<0.001$) (12).

13. A cross-sectional study aimed to evaluate the attitude of environmental and occupational health students toward their fields of study and future careers at Ardabil University of Medical Sciences in 2015. The results showed that the mean score of attitudes toward future careers was 52.5 ± 9.86 for environmental health students and 52.8 ± 8.1 for occupational health students, indicating that the students had a positive attitude toward their education and future careers (53).

14. A descriptive and cross-sectional study aimed to assess the perception of environmental and occupational health students of Semnan University of Medical Sciences toward their study fields and future careers in 2016. The results showed that the mean score of students' attitudes toward their fields of study was 30.20 ± 6.01, and toward their future careers was 23.01 ± 4.91. One-third of respondents (31.3%) indicated a negative perception toward their field of study, while the majority (69.6%) had a negative perception toward their future careers. Most students (54%) expressed concerns about future career opportunities (54).

15. A descriptive cross-sectional study aimed to determine the students' attitudes toward their fields of study and future careers at Zanjan University of Medical Sciences in 2016. The results showed that the mean score of the students' attitude toward their field of study was 22.10 (out of 27), and toward their future careers was 14.77 (out of 18), which was lower than the theoretical mean questionnaires. A significant difference was found between satisfaction with the field of study and variables including age group, gender, and educational level ($p<0.05$). The results indicated an unfavorable attitude of students toward their field of study and future careers (55).

16. A descriptive cross-sectional study aimed to investigate the students' interest in their field of study and affecting factors at Kashan University of Medical Sciences in 2017. The results showed that the mean score of the students' interest in their field of study was 75.69 (out of 100). The highest level of interest was among medicine and dentistry students, while the lowest level of interest was observed in students of laboratory sciences, health sciences, midwifery, and health information technology. A relatively significant inverse correlation was found between age and interest score ($r=-0.1$, $p=0.025$), indicating that interest scores were relatively lower in older students (56).

17. A descriptive-analytical study aimed to determine the students' interest in their field of study and the factors influencing it

from the viewpoint of students of Zahedan University of Medical Sciences in 2018. The results showed that the highest level of interest was among medical and dental students, while the lowest level of interest was among paramedical and health students, with a statistically significant difference observed between these groups ($p<0.05$) (57).

18. A cross-sectional study aimed to identify the attitude of public health students at Lorestan University of Medical Sciences toward their field of study and future profession in 2018. The results showed that the mean score of students' attitude toward the field of study was 27.14 ± 5.1 (theoretical mean score = 27), and toward future careers was 22.79 ± 5.25 (theoretical mean score = 24), indicating negative attitudes. A significant correlation was found between students' attitudes toward their field of study and future careers ($r = 0.472$, $p<0.001$) (58).

19. A cross-sectional descriptive study aimed to determine the attitudes of students toward their field of study and future careers at the Faculty of Health in Tabriz University of Medical Sciences in 2018. The results showed that the mean scores of attitudes toward their field of study and future careers were 46.83 ± 9.49 for environmental health engineering, 51.99 ± 9.14 for occupational health engineering, and 49.66 ± 7.87 for public health students (ranging from 16 to 80). Occupational health engineering students demonstrated a relatively more positive attitude compared to other students, while environmental health engineering students showed the most negative view. A statistically significant inverse correlation was found between attitude and age and academic year ($p=0.001$). Additionally, a strong positive significant correlation was observed between students' attitudes toward their field of study and future careers ($p = 0.01$, $r = 0.966$) (38).

20. A cross-sectional descriptive study aimed to assess the attitude of environmental health students of Shiraz University of Medical Sciences regarding their field of study and future careers in 2020. The results showed that more than 80% of students chose their field of study without prior knowledge, over 90% did not prioritize this field during selection, and 80% indicated that their field's attractiveness depended on job prospects. Consequently, the majority of students demonstrated an unfavorable perception of entering this field (59).

21. A cross-sectional study aimed to determine the attitude of students of Urmia University of Medical Sciences toward their field of study and future careers in 2021. The results showed that the majority of students had an average attitude toward their field of study (72.5%) and future careers (54.0%). Students in certain fields, including public health, environmental health, radiology, anesthesia, and laboratory sciences, demonstrated lower attitudes compared to other disciplines. Environmental health students exhibited the most negative attitude toward their field of study, while public health students showed the most negative attitude toward their future careers (60).

22. A cross-sectional study aimed to determine the employment status and its relationship with attitudes and satisfaction about the place of study of graduate health students of Ardabil University of Medical Sciences in 2022. The results showed that 20 to 32% of graduates were unemployed. The status of graduates' employment and continuing education was not favorable, but the attitude and level of satisfaction with the place and field of study were good (61).

23. A cross-sectional study was conducted to investigate the knowledge and satisfaction of healthcare management students at Iran University of Medical Sciences in 1996. The results showed that

students' satisfaction with the field of study ranged from low (20.53%) to moderate (48.21%). Additionally, 31.85% of the students demonstrated a negative attitude toward their future careers (62).

24. A descriptive study aimed to assess the satisfaction level of the BSc degree students of Health Management in one of the Tehran universities of medical sciences toward their field of study and future career in 2010. The results showed that only 42% of students were satisfied with their field of study, and 52% were not interested in their field of study. Additionally, 32% of students had a negative attitude toward their future careers. The poor interest and perspective of students toward their future careers necessitate more sensitivity regarding the students' career and occupational prospects (63).

25. A descriptive longitudinal study in 2018 aimed to identify the employment status of healthcare management graduates of Zabol University of Medical Sciences between 2009 and 2017. The results showed that 81.2% of the participants were satisfied with their job. However, about a third of the graduates were unemployed and had a negative attitude toward their future careers (64).

26. A descriptive-analytic and cross-sectional study in 2018 aimed to determine the career future of healthcare management from the perspective of graduates at Shahid Sadoughi University of Medical Sciences between 2012 and 2017. The results showed that 25.01% of graduates were unemployed. Additionally, the participants' attitudes toward their field of study, work and employment status in society, and entrepreneurial ability were average (65).

27. A cross-sectional study aimed to assess the educational needs of a BSc degree in healthcare management from the perspective of students at Shiraz University of Medical Sciences in 2019. The results showed that 30% of students had low satisfaction and 47.5% had moderate satisfaction with their field of study. Additionally, 35% of students assessed the entrepreneurial ability of graduates as low, while 50% rated it as moderate (66).

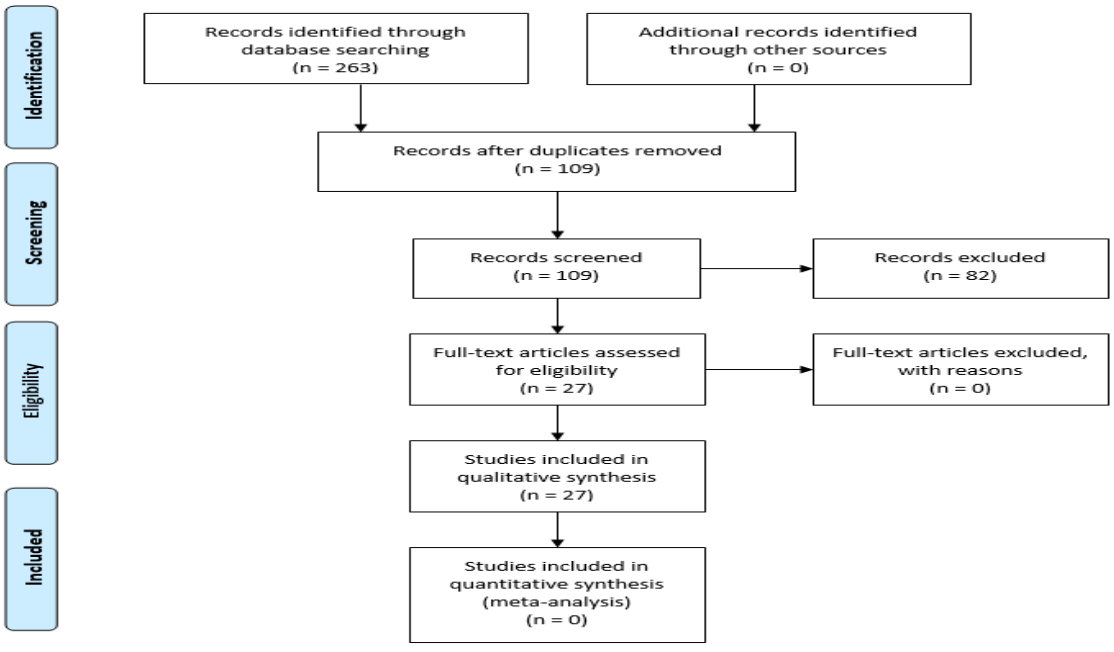

Fig.1: PRISMA Flowchart.

Table-2: State of Student Attitudes towards Field of Study and Future Career (n=27).

Field of study	University	Attitude toward Field of study	Attitude toward future career	Lowest satisfaction	Highest satisfaction	References
Health Sciences Students	North Khorasan University of Medical Sciences	average	-	environmental health	occupational health	48
Environmental Health And Occupational Health Students	Qazvin University of Medical Sciences	average	average	environmental health	occupational health	17
Medical Sciences Students	Urmia University of Medical Sciences	average	average	public health, environmental health, radiology, anesthesia, and laboratory sciences	medical, dental	60
Medical Sciences Students	Kashan University of Medical Sciences	average	average	medical and dental	students of laboratory sciences, health sciences, midwifery, and health information technology	56
Health Sciences Students	Zahedan University of Medical Sciences	average	average	-	-	51
Healthcare Management Students	Shahid Sadoughi University of Medical Sciences	average	average	-	-	65
Healthcare Management Students	Shiraz University of Medical Sciences	average	average	-	-	66
Health Sciences Students	Ahvaz Jundishapur University of Medical sciences	average	positive	-	-	49
Health Sciences Students	Ahwaz Jundishapur Medical Sciences University	positive	positive	-	-	46
Health Students Graduates	Ardabil university of medical sciences	positive	-	-	-	53
Environmental Health Students	Shahid Sadoughi University of Medical Sciences	positive	positive	-	-	52
Environmental Health Students	Guilan University of Medical Sciences	positive	positive	-	-	35
Health Sciences Students	Isfahan University of Medical Sciences	positive	positive	-	-	42
Health Sciences Students	Arak University of Medical Sciences	positive	positive	-	-	37
Environmental Health And Occupational Health Students	Ardabil University of Medical Sciences	positive	positive	environmental health	occupational health	61
Environmental Health Students	Hamedan University of Medical Sciences	positive	negative	-	-	47
Healthcare Management Students	Zabol University of Medical Sciences	positive	negative	-	-	64

Environmental And Occupational Students	Semnan University of Medical Sciences	negative	positive	-	-	54
Health Sciences Students	Tabriz University of Medical Sciences	negative	negative	environmental health	occupational health	38
Medical Sciences Students	Zanjan University of Medical Sciences	negative	negative	-	-	55
Health Sciences Students	Kurdistan University of Medical Sciences	negative	negative	-	-	50
Public Health Students	Lorestan University of Medical Sciences	negative	negative	-	-	58
Environmental Health Students	Shiraz University of Medical Sciences	negative	-	-	-	59
Medical Sciences Students	Zahedan University of Medical Sciences	-	-	paramedical and health	medicine and dental	57
Medical Sciences Students	Qom University of Medical Sciences	-	-	health sciences	medicine and dental	12
Healthcare Management Students	Iran University of Medical Sciences	negative	negative	-	-	62
Healthcare Management Students	Baqiyatallah University of Medical Sciences	negative	negative	-	-	63

4- DISCUSSION

This study aimed to review the attitudes of Iranian health professions students at the BSc level toward their field of study and future careers, along with the determining factors. The results showed that the highest level of satisfaction with the field of study was among dental and medical students, while the lowest level of interest was observed among health profession and paramedical students ($p<0.05$). Among the health professions students, environmental health and healthcare management students demonstrated the most negative attitudes toward their field of study, and public health students exhibited the most negative attitude toward their future career prospects.

One of the primary concerns of medical science universities is ensuring program quality and graduate employment (67). The Ministry of Health and Medical Education (MOHME) plays a critical role in addressing these challenges through internal evaluations and stakeholder consultations (68). Currently, the healthcare system confronts significant issues including unequal human resource distribution, uncertain employment prospects for young graduates, and limited university capacities (69-71).

The quantitative expansion of higher education without sufficient focus on graduate outcomes has precipitated substantial challenges such as academic failure, inadequate knowledge production, academic dependency, student migration, and insufficient professional skill development (49, 72-75). Consequently, investigating medical science students' attitudes and satisfaction toward their field of study and future careers becomes paramount. Such research provides essential insights for policymakers to systematically improve educational quality, training methodologies, and employment strategies within the healthcare sector, ultimately enhancing the

overall effectiveness of medical education and professional preparation.

Studies demonstrate that satisfaction with education serves as a key indicator of learning quality and can significantly influence students' academic progress (76, 77). In medical sciences, where disciplines are intrinsically linked to societal health and safety, it is crucial that students select their field of study with genuine interest and commitment. The absence of students' awareness regarding their professional roles and a lack of engagement with their chosen field can create a substantial misalignment between societal needs, professional expectations, and future employment opportunities, potentially generating cascading consequences that impact both educational and healthcare systems (3, 4). This misalignment not only affects individual student performance but can also compromise the broader effectiveness and quality of healthcare service delivery.

Interest in the field of study and hope for future employment cultivate a sense of responsibility that enhances individuals' efficiency in providing health services (78-85). When students find their chosen field unpleasant, studying and working can become exhausting, potentially leading to academic and occupational burnout (5, 6, 86, 87). Research across Iranian medical universities reveals significant academic burnout prevalence. Studies at various institutions demonstrated varied burnout levels: Askarpoor et al. found that among 400 health sciences students, 2.3% experienced low burnout, 61.3% moderate burnout, and 36.5% high burnout (88). Another study at Mashhad University of Medical Sciences indicated approximately 87% of students suffered from moderate to severe academic burnout (89). The increasing number of graduates, rising unemployment rates, and workforce recruitment challenges have generated widespread worry, despair, and uncertainty about future careers among students (34). Conversely, a positive perspective on future career prospects can create educational motivation, potentially leading to professional progress and success (90). Experts like Arab Zozni et al. suggest that addressing student motivation, understanding their needs, and implementing strategic planning in admission, study, and career development processes can foster educational satisfaction and career optimism (91).

Failing to address motivational issues and labor force preferences in the long term can negatively impact service provision within the health system, societal problem-solving, and ultimately, individual and collective professional efficiency. The current review revealed that medical and dental students demonstrated the most positive attitudes toward their field of study, while health and paramedical students exhibited the most negative perspectives. Consistent with these findings, a study by Jafari et al. (2018) specifically highlighted that dental students at Tehran University of Medical Sciences maintained a notably positive attitude toward both their field of study and future career prospects (92). This observation underscores the critical importance of understanding and addressing student motivation, professional satisfaction, and career expectations across different healthcare disciplines. The disparities in attitudes among various medical science students suggest the need for targeted interventions to improve engagement, professional identity, and career outlook, particularly in fields experiencing lower levels of student satisfaction.

Studies by various Iranian researchers reveal complex attitudes among medical students toward their field of study and future careers. Sadr Rahami et al. found that while medical students at Isfahan University of Medical Sciences maintained

a favorable attitude toward their field of study, they expressed a negative perspective on their future careers (93). Similarly, Ervani et al. reported a generally negative attitude among medical students at Jahrom University of Medical Sciences (94).

A study at Babol University of Medical Sciences highlighted significant challenges, with 57.5% of medical students demonstrating a negative attitude toward their field of study and future careers, primarily citing concerns about job security (95). Additional research indicates that the high student acceptance rates in medicine and dentistry have created unfavorable labor market conditions (57, 60, 96). The excessive student intake in these fields emerges as a critical factor contributing to students' negative attitudes and potential professional disengagement, ultimately leading to reluctance and diminished career enthusiasm (97).

The review revealed nuanced attitudes across health profession disciplines, with environmental health and health service management students demonstrating the most negative perspectives, while occupational health students exhibited the most positive attitudes toward their field of study.

Empirical studies substantiate these attitudinal challenges. A comprehensive national survey of 972 students across associate, bachelor, and master degree levels in environmental health highlighted significant unemployment rates: 64.4% of associate students, 42.7% of bachelor students, and 3.7% of master students were unemployed (4). A subsequent study at Ardabil University of Medical Sciences examining 340 health science graduates found that between 20-32% of environmental health, public health, and occupational health graduates remained unabsorbed by the labor market during 2011-2016 (61). Further research in Tehran revealed that only 42% of healthcare management students were satisfied with their field of study, with 32% expressing negative career perspectives and 52% demonstrating a lack of interest. Additionally, assessments of graduates' entrepreneurial capabilities indicated that 35% were evaluated as having low potential, while 50% were considered to have moderate entrepreneurial abilities (63, 66).

The employment landscape in health professions is confronting significant challenges due to escalating student admissions and graduate numbers, necessitating comprehensive strategic interventions. The current employment ecosystem is constrained by structural limitations, particularly evident in public sector policies from the third and fourth development plans, which have been unable to absorb the growing graduate population. Simultaneously, the private sector lacks sufficient capacity to accommodate these graduates' employment needs. To address these challenges, a multifaceted approach is essential: beyond reducing student admission capacities, there is an urgent need to integrate entrepreneurial skill training for students and graduates. This strategy aims to create innovative service markets, develop alternative employment pathways, and enhance graduates' adaptability in a competitive professional landscape. By focusing on entrepreneurial education and strategic admission management, the health professions sector can more effectively align graduate capabilities with market demands and economic opportunities (64).

The positive attitude among occupational health engineering students, in contrast to environmental health and public health students, can be attributed to several key factors: robust job security, favorable labor market conditions, limited student intake, a well-established industry position, and

promising employment prospects. Conversely, environmental health students' negative attitudes stem from a complex array of challenges, including professional insecurity, excessive student admissions, saturated labor market, limited employment opportunities, insufficient organizational positions in government sectors, inadequate employment platforms in industrial and private sectors, restricted employment capacity in healthcare units, and reduced field compatibility for female students. These multifaceted issues collectively contribute to the diminished professional outlook and motivation among environmental health students, reflecting broader systemic challenges in healthcare education and workforce integration (17, 34, 48, 52, 53, 59).

The review revealed that public health students exhibit more pronounced concerns and negative attitudes toward their career future compared to students in other health disciplines. Supplementary research on public health students, employees, and graduates consistently highlights critical challenges: educational programs and course content frequently fail to align with graduates' job market requirements. Moreover, students demonstrate limited exposure to entrepreneurial skills, predominantly focusing on potential government healthcare employment, which restricts their ability to envision diverse career trajectories. Similar challenges emerge in healthcare management, where approximately one-third of graduates experience unemployment and maintain negative perspectives on their professional prospects. These students also demonstrate low self-assessment of entrepreneurial capabilities, further compounding their career development challenges. The systematic disconnection between academic training and professional market demands creates a pervasive sense of uncertainty and limited opportunity among public health and healthcare management students (50, 58, 62-64, 98).

Multiple systemic factors contribute to the challenging employment landscape for health profession graduates, including misalignment between educational curricula and labor market knowledge requirements, inadequate entrepreneurial skills development, limited university expansion without maintaining educational quality, monotonous educational programs disconnected from economic developments, technological shifts and emerging societal needs, disproportionate graduate numbers, and insufficient employment capacity relative to graduate growth. These interconnected challenges can significantly undermine graduates' employment prospects and professional opportunities (60, 99).

Conversely, several key motivational factors can positively influence students' professional outlook and career satisfaction, such as robust job security, competitive salaries and comprehensive benefits, engaging work environments, genuine interest in the field of study, supportive academic mentorship encouraging further education, proactive opportunities for professional self-development, and strategic guidance in creating personal career opportunities. By addressing these motivational elements, educational institutions can foster a more positive attitude toward professional development, enhance student engagement, and improve overall career perspectives in health professions (59, 60, 74, 99-104).

The healthcare education system requires comprehensive strategies to enhance employment opportunities for health profession graduates across various system levels. Critical interventions must focus on curriculum redesign that aligns with dynamic labor market requirements, develops industry-responsive learning modules, and ensures graduates' skills

match emerging healthcare needs. Educational institutions should proactively showcase graduate capabilities, facilitate stronger connections between academic programs and healthcare labor markets, and implement strategic planning processes that include standardized student admission evaluations and forward-looking workforce projections. Empowering health profession students through entrepreneurship skill development, self-employment support, and innovative career pathway creation emerges as a pivotal approach to addressing current employment challenges. Given the prevalent unfamiliarity with entrepreneurship among students, conducting targeted research to develop robust empowerment frameworks becomes essential. Such studies should aim to equip graduates with adaptive skills, enabling them to navigate complex healthcare employment landscapes, generate innovative professional opportunities, and effectively respond to evolving healthcare system demands (59, 60, 74, 99-104).

5- CONCLUSION

Medical science disciplines are fundamentally interconnected with societal health and safety, necessitating that students select their field of study with genuine interest and obtain practical experience in healthcare centers to enhance their service efficiency. Research findings reveal significant variations in professional satisfaction across healthcare disciplines, with dental and medical students demonstrating the most positive attitudes, while health profession and paramedical students exhibit minimal interest. Environmental health and healthcare management students show the most negative attitudes toward their field of study, and public health students express the most pessimistic perspectives regarding future career prospects.

A critical observation is the significant correlation between students' attitudes toward their current field of study and their perceptions of future career opportunities. To address these challenges, comprehensive strategies are essential, including curriculum redesign aligned with labor market requirements, reducing student admission rates, implementing entrepreneurship skill training, creating innovative service markets, and developing alternative employment pathways. Given limited government employment opportunities, empowering students with entrepreneurial skills becomes crucial for generating new professional opportunities and addressing workforce integration challenges.

6- AUTHORS' CONTRIBUTIONS

Study conception or design: MV, FB; Data analyzing and draft manuscript preparation: FB, and MA; Critical revision of the paper: MV, and FB; Supervision of the research: MV; Final approval of the version to be published: MV, FB, MA, and FB.

7- CONFLICT OF INTEREST: None.

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