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Presenting a Model Regarding the Effect of Ethical Sensitivity and Its Associated Components on the Quality of Research among Academic Personnel

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ABSTRACT

Background and Objective: Ethical sensitivity is one of the criteria regarding the professional competence of researchers, which affects the ethical performance of the researcher. Since compliance with the principles and rules of ethics is an effective factor in providing high quality research results, the present study was conducted to investigate the ethical sensitivity and its associated components on the quality of research among academic personnel of universities of medical sciences in metropolitan area No. 1 in Iran.

Methods: This cross-sectional study was conducted on 320 academic personnel of universities of medical sciences in metropolitan area No. 1 (Guilan, Mazandaran, Golestan, Babol, Shahrud, and Semnan) who were selected by stratified random sampling. Data were collected using ethical sensitivity and research quality questionnaires. The ethical sensitivity questionnaire includes 50 questions and two dimensions of "functional and individual", each of which includes 4 fields. The researcher-made questionnaire of research quality includes 31 questions and 4 fields. The questionnaires were rated from 1 to 5 according to Likert scale. Ethical sensitivity was compared between researchers based on work experience, academic degree and gender. Then, the effect of each component of ethical sensitivity on the quality of the research was evaluated.

Findings: Out of 320 studied samples, 223 were male (69.7%) and 97 were female (30.3%). In people with experience of less than 10 years, the mean score of honesty was 15.74±3.21, ethical behavior was 30.50±5.74, accountability was 33.81±5.64, decision-making was 23.62±4.28, and interpersonal communication was 18.66±3.56, indicating higher values compared to people with an experience of more than 10 years ($p<0.01$). Among the dimensions of ethical sensitivity, the dimensions of honesty and discipline showed positive and significant effects on the quality of research. However, the effect of respect for the client, ethical behavior, professional knowledge, accountability, decision-making and interpersonal communication was not statistically significant despite the effect on the quality of the research. Discipline had the greatest effect on research quality ($\beta=0.293$). The R^2 value (0.489) shows that about 49% of the variance of the research quality score is explained by the dimensions of ethical sensitivity. Ethical sensitivity with a standard coefficient of 7.758 had an effect on the quality of research.

Conclusion: The results of the present study showed that ethical sensitivity, especially the dimensions of honesty and discipline, has an effect on the quality of research.

Keywords: *Ethical Sensitivity, Research, Academic Personnel, Model Presentation*.

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Introduction

Ethical sensitivity and adherence to it is of great importance among academic personnel of universities of medical sciences. Although the necessity of this issue has been shown by the compilation of ethical codes, only being familiar with ethical codes does not guarantee their implementation, rather it is necessary for people to be sensitive enough to use these codes (1). Researchers of medical sciences, especially researchers of the clinical group, as one of the largest groups providing services to patients, may face situations that require taking measures for patients. Researchers often encounter situations that require research to find a logical solution. Ignoring the principles and standards of ethics in research activities can undermine the production of knowledge and provide the basis for the spread of behaviors contrary to research ethics, which will result in adverse consequences in the society (2).

Sensitivity to ethics adds to the credibility of research and guarantees the quality of research (3, 4). Therefore, professors, students and managers of universities, including universities of medical sciences, should be familiar with the ethical codes and ethical standards related to their profession and have sufficient mastery in this field. That's because adherence to scientific ethics and honesty in research improves the quality of research and scientific development of the country. Although ethical sensitivity is necessary and important in all fields, it is of higher significance in the medical profession. Ethics in science and research leads to the stability and coherence of scientific research (5).

The most important guarantor of performing an ethical act is giving importance to it, which is created by sensitivity in ethical behavior. Ethical sensitivity, as the first component for observing ethics, is a combination of a person's awareness of moral dimensions such as tolerance, calmness, accountability and giving importance to ethical issues (6). Ethical sensitivity is an internal factor that helps differentiating between right and wrong and performing the right action (7) and is not only related to the individual's sense, but also requires personal capacity and experience to recognize the importance of the ethical issue in the situation (8, 9). Ethical sensitivity, by sensitizing researchers when facing ethical issues in a professional environment, increases the ability to diagnose ethical problems, improve the ability to make ethical decisions, and leads to the acquisition of problem-solving skills in ethical dilemmas (10, 11). Ethical sensitivity is the first element in the ethical process that causes people to identify, interpret and respond appropriately to the concerns they receive from professional services (12). Although studies show that researchers' awareness of ethical principles and laws and their compliance in presenting research results is increasing, they may face difficulties in identifying ethical dilemmas and choosing the appropriate method to solve ethical dilemmas (13).

It is necessary to spread the culture of research ethics and develop efficient research centers and train professional and committed 1researchers in universities. Commitment to the principles and rules of ethics in research is necessary to produce harmless science in any research field (14). Ethical sensitivity, in addition to being able to answer many motivational issues and problems of students in conducting research, also helps professors identify the strengths and weaknesses of students in conducting research. Therefore, recognizing and paying attention to ethical sensitivity will also be effective in improving the quality of research. Therefore, the present study was conducted in order to investigate the effect of ethical sensitivity and its components on the quality of research among academic personnel of universities of medical sciences in metropolitan area No. 1 in Iran.

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Methods

After being approved by the ethics committee of Babol University of Medical Sciences with ethics code IR.MUBABOL.HRI.REC.1397.299, this cross-sectional study was conducted on 320 faculty members of universities of medical sciences in metropolitan area No. 1 in Iran (Babol, Semnan, Shahroud, Golestan, Guilan and Mazandaran), which were selected by stratified random sampling based on university units.

In order to collect data, a researcher-made questionnaire of demographic information, ethical sensitivity and quality of research was used. The researcher-made questionnaire of ethical sensitivity includes 50 questions and two "personal and functional" dimensions with scores from 22 to 110 and 28 to 140 and eight components (honesty, respect for clients, discipline, ethical behavior, professional knowledge, accountability, decision-making and interpersonal communication) which is graded based on a Likert scale from 1 to 5. According to the number of questions, 4 to 20, 5 to 25, 5 to 25, 8 to 40, 8 to 40, 9 to 45, 6 to 30 and 5 to 25 points were awarded in each area. Its face and content validity were confirmed by experts and its reliability was confirmed with Cronbach's alpha coefficient of 0.89.

The questionnaire created by the researcher on the quality of research includes 31 questions and four dimensions "budget and equipment, development of information resources, development of human resources and organization structure", which is graded based on a Likert scale from 1 to 5. In each area, 8 to 40, 10 to 50, 8 to 40 and 6 to 30 points were awarded in each area. Its face and content validity were also confirmed by experts and its reliability was confirmed with Cronbach's alpha coefficient of 0.78. Then, the effect of ethical sensitivity and its various components on the quality of research was investigated based on the obtained score.

Data analysis was done using SPSS and PLS 21 software, T-Test, ANOVA, Tukey post hoc test and multivariate regression, and $p<0.05$ was considered significant.

Results

Out of 320 studied samples, 223 were men (69.7%) and 97 were women (30.3%). 2 people were single (0.6%) and 318 people were married (99.4%). 59 people (18.5%) had a work experience of less than 10 years and 75 people (23.4%) had a work experience of more than 20 years. 42 people (13.1%) were in the age group below 45 years and 81 people (25.3%) were in the age group above 50 years. Furthermore, 35 people (10.9%) were instructors, 205 people (64.1%) were assistant professors, 61 people (19.1%) were associate professors, and 19 people (5.9%) were professors.

The results of the t-test showed that in all dimensions of moral sensitivity (honesty in men (14.28±3.47) and in women (15.52±3.65), respect for clients in men (17.30±3.96) and in women (18.87±3.64), discipline in men (17.03±3.80) and in women (18.02±3.09), moral behavior in men (27.93±6.50) and in women (29.85±5.03), professional knowledge in men (27.79±6.35) and in women (29.87±5.77), accountability in men (31.01±6.61) and in women (33.36±5.65), decision making in men (21.37±4.99) and in women (23.62±4.58) and interpersonal communication in men (17.05±3.96) and in women (18.32±3.64)), a significant difference was observed between male and female faculty members ($p<0.05$) and the mean score of all dimensions was significantly higher in women compared to men.

The results of the t-test showed that there was no significant difference in any dimension of research quality between male and female faculty members, and the mean score of all dimensions of research quality (budget and equipment in men (28.55±6.98) and in women (28.88±6.04), development of information resources in men (36.22±8.62) and in women (37.13±7.69), development of human resources in men

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(25.31±6.62) and in women (25.87±5.83) and organization structure in men (21.69±5.46) and in women (22.04 ± 4.83)) was higher in women compared to men, but this difference was not significant.

The results of the t-test showed that there is no significant difference between single and married faculty members in all aspects of research quality, and the mean score of development of information resources and development of human resources in single people was more than married people, but this difference was not significant. However, in terms of budget, equipment and organization structure, the mean score of married people was higher than that of single people, but this difference was not significant.

The results of the one-way analysis of variance (ANOVA) test showed that there was a significant difference between the dimensions of ethical sensitivity, honesty, ethical behavior, accountability, decision-making and interpersonal communication between academic personnel according to work experience ($p<0.05$), but in other dimensions of ethical sensitivity, this difference was not significant (Table 1).

Table 1. Comparison of dimensions of ethical sensitivity according to work experience

Variable and work experience	Mean±SD	F	p-value
Honesty			
Less than 10 years	15.74±3.21		
10-20 years	14.36±3.54	3.454	0.033
Over 20 years	14.53±3.78		
Respect for clients			
Less than 10 years	18.57±3.51		
10-20 years	17.54±3.95	1.541	0.216
Over 20 years	17.74±4.13		
Code of conduct			
Less than 10 years	18.28±3.42		
10-20 years	17.05±3.61	2.633	0.073
Over 20 years	17.26±3.74		
Ethical behavior			
Less than 10 years	30.50±5.74		
10-20 years	28.11±6.16	3.871	0.022
Over 20 years	27.96±6.19		
Professional knowledge			
Less than 10 years	29.77±5.91		
10-20 years	28.16±6.23	1.727	0.179
Over 20 years	28.00±6.45		
Accountability			
Less than 10 years	33.81±5.64		
10-20 years	31.14±6.51	3.987	0.019
Over 20 years	31.52±6.52		
Decision making			
Less than 10 years	23.62±4.28		
10-20 years	21.58±4.92	3.840	0.023
Over 20 years	22.00±5.40		
Interpersonal communication			
Less than 10 years	18.66±3.56		
10-20 years	17.17±3.91	3.568	0.029
Over 20 years	17.14±4.0		

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The results of Tukey's post hoc test showed that the mean score of honesty, ethical behavior, accountability, decision-making and interpersonal communication was higher in people with less than 10 years of work experience (Table 2). Moreover, there was no significant difference between faculty members in terms of work experience in all dimensions of research quality, and the scores of all areas were higher in people with work experience of less than 10 years, but this difference was not significant. Among the dimensions of ethical sensitivity, there was a significant difference between academic personnel in terms of age in code of conduct, ethical behavior, professional knowledge, accountability, decision-making, and interpersonal communication ($p<0.05$), but this difference was not significant in other dimensions of ethical sensitivity.

Table 2. Comparison of honesty, ethical behavior, accountability, decision-making and interpersonal communication according to work experience

Variable	Work experience		Mean difference	p-value
Honesty	Less than 10 years	10-20 years	1.38	0.026
		Above 20 years	1.21	0.123
Ethical behavior	Less than 10 years	10-20 years	2.39	0.024
		Above 20 years	2.54	0.044
Accountability	Less than 10 years	10-20 years	2.66	0.015
		Above 20 years	2.29	0.098
Decision-making	Less than 10 years	10-20 years	2.04	0.016
		Above 20 years	1.62	0.142
Interpersonal communication	Less than 10 years	10-20 years	1.48	0.029
		Above 20 years	1.51	0.065

The results of Tukey's post hoc test showed that the mean score of discipline, ethical behavior, professional knowledge, accountability, decision-making and interpersonal communication was higher in people under 40 years of age, but this difference, apart from the components of professional knowledge and decision-making, was significant in rest of the components (Table 3).

Table 3. Comparison of code of conduct, ethical behavior, professional knowledge, accountability, decision-making and interpersonal communication according to age

Variable	Age		Mean difference	p-value
Code of conduct	Over 50 years	Below 40 years	-1.58	0.56
		40-50 years	-1.14	0.044
Ethical behavior	Over 50 years	Below 40 years	-2.47	0.085
		40-50 years	-1.93	0.044
Professional knowledge	Over 50 years	Below 40 years	-2.53	0.082
		40-50 years	-1.79	0.074
Accountability	Over 50 years	Below 40 years	-3.22	0.022
		40-50 years	-2.01	0.045
Decision-making	Over 50 years	Below 40 years	-2.13	0.062
		40-50 years	-1.32	0.106
Interpersonal communication	Over 50 years	Below 40 years	-1.74	0.049
		40-50 years	-1.13	0.071

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There was no significant difference between faculty members in terms of age in all dimensions of research quality, and in people aged 40 to 50 years, the mean score of budget and equipment was (29.07±6.54), development of information resources (37.14±8.16), development of human resources (25.96±6.31) and organization structure was (22.24±5.16).

Among the dimensions of ethical sensitivity, there was a significant difference in honesty, discipline, professional knowledge, accountability, decision-making, and interpersonal communication between faculty members according to academic rank ($p<0.05$), but this difference was not significant in other dimensions of ethical sensitivity (Table 4).

The results of Tukey's post hoc test showed that the mean score of honesty, professional knowledge and decision-making in the scientific rank of associate professor and discipline, accountability and interpersonal communication in the scientific rank of instructor was higher, but this difference was not significant. There was no significant difference between academic personnel in terms of academic rank in all dimensions of research quality. The mean score of budget and equipment (28.95±6.66), development of information resources (36.94±8.29), development of human resources (25.92±6.37) and organization structure (22.13±5.29) was higher in assistant professor, but this difference was not significant.

The results of the multivariate regression test showed that among the dimensions of ethical sensitivity, the dimension of honesty and code of conduct had a positive and significant effect on the quality of research ($p<0.05$). However, the effect of respect for clients, ethical behavior, professional knowledge, accountability, decision-making and interpersonal communication on research quality was not significant. Moreover, the code of conduct has the greatest impact on research quality ($\beta=0.293$). The value of R^2 (0.489) shows that about 49% of the variance of the research quality score is explained by the dimensions of ethical sensitivity (Table 5) (Figure 1).

Table 4. One-way analysis of variance results (comparison of dimensions of ethical sensitivity according to scientific rank)

Variables and scientific rank	Mean±SD	F	p-value
Honesty			
Instructor	15.02±3.61	2.819	0.039
Assistant Professor	14.45±3.45		
Associate Professor	15.59±3.80		
Full Professor	13.21±3.45		
Respect for clients			
Instructor	18.71±4.02	2.041	0.108
Assistant Professor	17.47±3.83		
Associate Professor	18.52±4.05		
Professor	17.05±4.11		
Code of conduct			
Instructor	18.40±3.83	2.837	0.038
Assistant Professor	17.00±3.54		
Associate Professor	18.08±3.64		
Professor	16.47±3.61		
Ethical behavior			

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Variables and scientific rank	Mean±SD	F	p-value
Instructor	29.94±6.35	2.068	0.104
Assistant Professor	28.17±6.14		
Associate Professor	29.49±5.76		
Professor	26.47±6.47		
Professional knowledge			
Instructor	29.80±6.68	3.504	0.016
Assistant Professor	27.93±6.12		
Associate Professor	30.06±5.89		
Professor	25.89±6.59		
Accountability			
Instructor	33.22±7.15	2.925	0.034
Assistant Professor	31.24±6.17		
Associate Professor	33.18±6.55		
Professor	29.42±6.32		
Decision making			
Instructor	23.08±5.30	3.218	0.023
Assistant Professor	21.65±4.78		
Associate Professor	23.37±5.04		
Professor	20.31±5.35		
Interpersonal communication			
Instructor	18.31±4.22	2.694	0.046
Assistant Professor	17.20±3.80		
Associate Professor	18.22±3.90		
Professor	15.89±3.90		

Table 5. The results of the multivariate regression test to determine the effect of the dimensions of ethical sensitivity on the quality of research

Variables	F	p-value	R	R^2	β	T	p-value
Constant	37.135	0.000	0.699	0.489	–	4.476	0.000
Honesty					0.262	3.011	0.003
Respect for clients					-0.110	-1.046	0.296
Code of conduct					0.293	2.744	0.006
Ethical behavior					0.115	0.849	0.396
Professional knowledge					0.132	1.154	0.249
Accountability					0.167	1.227	0.221
Decision making					-0.207	-1.581	0.115
Interpersonal communication					0.105	0.877	0.381

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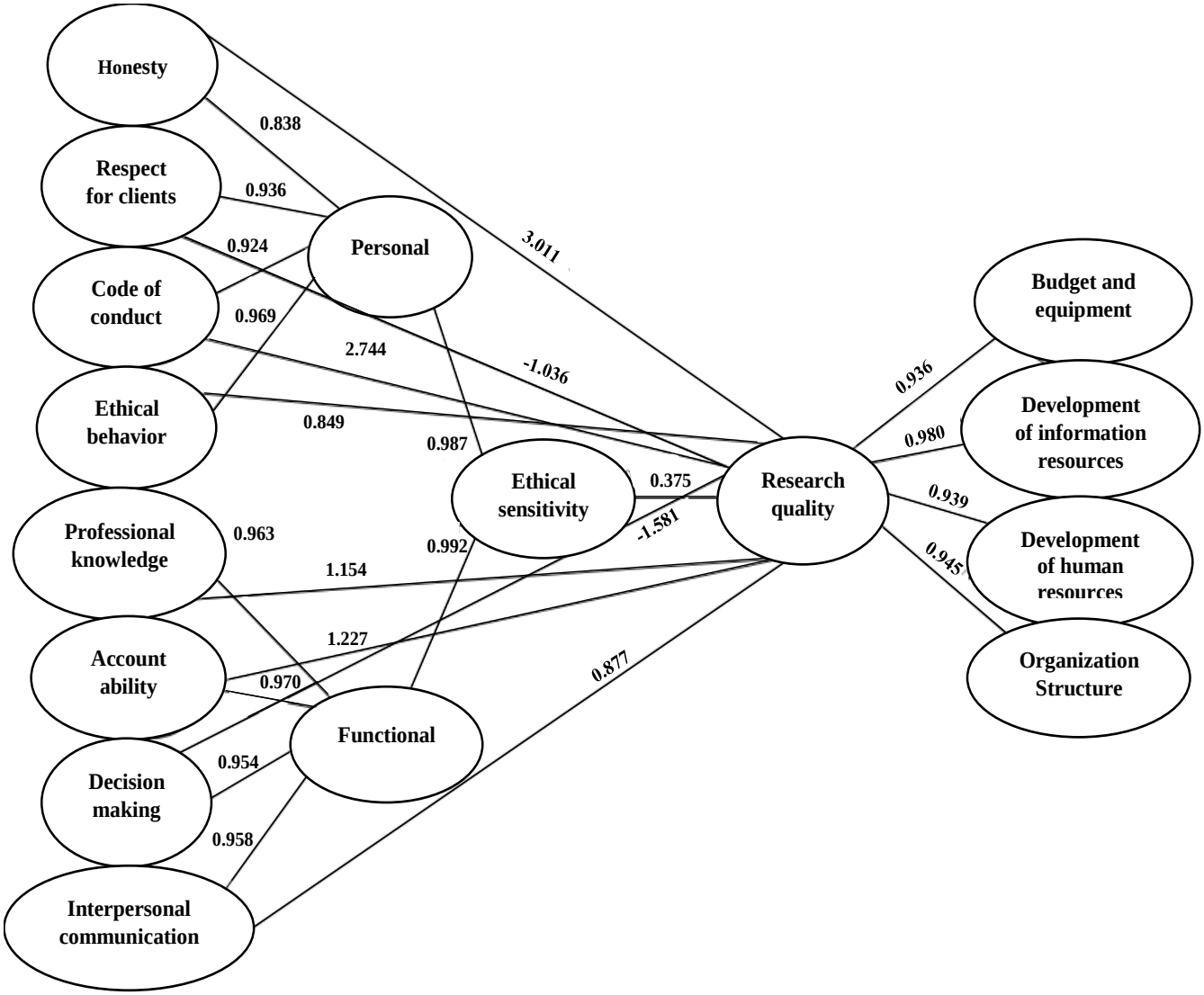


Figure 1. Structural model of the effect of ethical sensitivity on the quality of research in standard estimation of path coefficients

Discussion

In this study, the scores of all dimensions of ethical sensitivity were significantly higher in women compared to men. In terms of work experience, in the dimensions of honesty, ethical behavior, accountability, decision-making, and interpersonal communication, people with less than 10 years of experience scored higher. Since no research has been conducted so far to examine the effect of ethical sensitivity on the quality of research, this study was compared with studies that examined different dimensions of ethical sensitivity on medical professionals. Amiri et al. showed in their research that the highest moral sensitivity score was in the dimension of "awareness of interpersonal communication" (13). In the study of Monrouxe et al., it was shown that job satisfaction can be effective in creating ethical sensitivity (15). Contrary to the result of this study, Tas Arslan et al., in a study on nurses working in medical centers, showed that moral sensitivity scores were higher in nurses who were older (16). It seems that the

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reason for this difference is in answering the questions; considering the high level of responsibility and lack of time, probably the professors did not answer the questions carefully. In this study, in most dimensions, ethical sensitivity in people aged less than 40 years had a higher score than people over 40 years of age and a significant relationship was found. But in the study of Izadi et al., there was no significant relationship between ethical sensitivity and age (17).

The results of a study by Baloochi Beydokhti et al. showed that there is no significant relationship between ethical sensitivity and age, marital status, work experience, and academic rank (18). In the study of Dalvand et al., there was a significant relationship between ethical sensitivity and gender (19). In this study, ethical sensitivity had a significant relationship with gender in all dimensions. In their study, Sadrollahi et al. showed that there is no significant relationship between ethical sensitivity and marriage, work experience and academic rank (20). In this study, marriage had a significant relationship with ethical sensitivity. However, no significant relationship was observed between ethical sensitivity and work experience and academic rank. It seems that the reason for the difference lies in the fact that the faculty members in this study are simultaneously engaged in therapeutic, educational and research work, so they are not able to pay attention to a specific issue. Moreover, Zahed Pasha et al. also showed in their study that the principles of medical ethics are not followed seriously in clinical trials and this may be due to the lack of attention of researchers in observing the principles of research ethics (21).

In their research, Salar et al. showed that there is a significant relationship between ethical sensitivity, honesty and gender (22). In this study, a significant relationship was observed between ethical sensitivity, honesty and gender. In his study, Lee showed that the level of education has an effect on ethical sensitivity (23). Since in this study, all the researchers had university education, they were compared in terms of academic rank, which, similar to Lee's study, showed a significant relationship. Nora et al. in a study titled "Evaluation of ethical sensitivity in primary health care nurses" showed that the level of ethical sensitivity in nurses was average (24). But in this study, in all the professors from the instructor to the full professor, the score of ethical sensitivity was higher than the average, and this is the reason for the existence of ethical sensitivity in the researchers of this study. In a study conducted by Ghamari Zareh et al. on nurses, various factors, including culture, were involved in ethical decisions (25). In their study, Baleghi Damavandi et al. showed that trustworthiness, accountability, patience, teamwork spirit, as well as compliance with the principles and rules of ethics in research can have a positive and significant impact on the quality of research (26). Therefore, it can be said that ethical sensitivity in research is different in different cultures.

The results of this study showed that ethical sensitivity, especially the dimension of honesty and code of conduct, affects the quality of research. Preforming further studies on all academic personnel in the country is recommended. It is also recommended to hold ethics workshops in different fields in proportion to the number of academic personnel and students of each university, so that all those involved in research have sufficient information on all aspects of the principles of ethics. In addition, it is recommended to fully supervise studies by ethics committees, especially in the field of medical sciences.

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