

Presenting a Model of Impact of Research Ethics on the Quality of Research of Faculty Members

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ABSTRACT

BACKGROUND AND OBJECTIVE: With the increasing growth of research in society and the importance and necessity of research in development and progress, adherence to ethics in research seems to be one of the most important pillars for the development of science. Therefore, the present study was conducted to present a model of the impact of research ethics on the quality of research of faculty members.

METHODS: This cross-sectional study was performed on 320 faculty members of Medical Sciences Universities of a large area of the country (Babol, Semnan, Shahrood, Golestan, Gilan and Mazandaran) selected by stratified random sampling. In order to investigate the impact of research ethics on research quality, researcher-made questionnaires of research ethics consisted of 65 questions and two dimensions of "individual and social" and nine components (trustworthiness, responsibility, professional commitment, knowledge and perseverance and patience, respect for the rights of the subjects, teamwork morale, responsibility for disseminating results, and attending to community needs) were used. In addition, the research quality questionnaire including 31 questions and four dimensions of "budget and equipment, information resource development, human resource development and organization structure" was applied. In both questionnaires according to the number of questions for each component, grading was based on Likert scale from 1 to 5, and then the impact of each component on research ethics on the quality of research was assessed.

FINDINGS: From 320 samples, 223 (69.7%) were male and 97 (30.3%) were female. The mean score of trustworthiness was 24.5 ± 20.69 in males and 25.5 ± 72.81 in females ($p < 0.05$). Research ethics with standard coefficient (0.814) had an impact on research quality. The results also indicated that among the dimensions of research ethics, trustworthiness, responsibility, subject rights and teamwork spirit had a positive and significant effect on research quality ($p < 0.05$).

CONCLUSION: The results of this study demonstrated that research ethics has an impact on the quality of research of faculty members of Medical Sciences Universities in a large area of the country.

KEY WORDS: *Research Ethics, Research Quality, Faculty Members, University of Medical Sciences.*

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Introduction

The importance of research and development of research activities in each country contributes to the development of real self-sufficiency and independence for that society. The first step in organizing research in the community is to gain a proper understanding of the capabilities, facilities available, and to incorporate research strengths and weaknesses. Most research and scientific production activities are carried out by universities, including medical universities. Therefore, by doing better researches with high quality, more scientific development of that country will be accelerated (1).

Research involves principles that guide the key steps including title selection, explaining research methodology, data collection, data analysis and dissemination of results, and provide guidelines for the responsibility of researchers. It also helps them to conduct scientific research in accordance with accepted professional standards (2-4). Clinical trials are a type of research used to investigate the cause-and-effect relationship in therapeutic intervention, and individuals are randomly assigned into two groups, subject to treatment intervention and the other as a control group. Since this method is the best scientific method for evaluating therapeutic methods, due to the importance of the subject in clinical trials studies have always been in the focus of attention in ethical considerations (5-7). The purpose of ethics in medical research is to protect the human subjects involved so that the health of individuals and the community is not sacrificed for the dissemination of knowledge and research or the financial benefits of the research.

The reason for knowing ethics and adhering to its principles and rules for research is that the researcher and research subjects are not sufficiently and fully aware of the necessity of a research for the project's scientific and ethical value. In addition, research subjects will be protected from losses as much as possible. Therefore, researchers need an experienced and impartial committee to prove their competence. Researchers are required to publish their research results honestly, accurately and completely, free from conflict of interest. How the research results are reported should guarantee the material and intellectual rights of all relevant research partners and research support resources.

One of the most important requirements of medical research is that research is effective in the health and well-being of society. Whatever research is done with high ethical credibility adds to its quality and one of the

factors that can influence the quality of research is ethics in research. Imaz et al. stated that adherence to ethical principles in research leads to higher quality of research (8). Moreover, Baleghi et al indicated that observing research ethics in the health science community requires attention to the necessary infrastructure and high quality of research (9). Zahedpasha et al. (2001) found that in only 16% of the cases, ethical considerations were observed in medical students' dissertations and suggested ethics workshops (10).

Lack of ethics in science and research threatens the consistency of scientific research (11-13). Therefore, professors, students and university administrators, including medical universities, should be familiar with the ethical codes and standards of ethics associated with their profession and have sufficient mastery in this regard, as adherence to scientific ethics and honesty in research improves quality of research and scientific development of the country. Thus, the purpose of this study was to investigate the impact of research ethics on the research quality of faculty members and to present a model.

Methods

This cross-sectional study was approved by the Ethics Committee of Babol University of Medical Sciences with ethics code of IR.MUBABOL.HRI.REC. 299.1397. The study was conducted on 320 faculty members of one regional medical university (Babol, Semnan, Shahrood, Golestan, Gilan and Mazandaran) selected by stratified random sampling method. Demographic questionnaire, research ethics and researcher-made research questionnaire were used for data collection.

Researcher-made questionnaire of research ethics including 65 questions and two dimensions of "individual and social" and nine components (trustworthiness, responsibility, professional commitment, Knowledge and information, perseverance and patience, observance of subject rights, teamwork spirit, responsibility to dissemination of results and attention to community needs), which was scored on a Likert scale of 1 to 5. In each section, according to the number of questions, the scores were 7 to 35, 6 to 30, 7 to 35, 5 to 25, 8 to 40, 8 to 40, 8 to 40 and 6 to 30, respectively. The content validity was confirmed by experts and its reliability was confirmed by Cronbach's alpha coefficient of 0.89. The researcher-made questionnaire of research quality consists of 31

questions and four dimensions of "Budget and Equipment, Information Resource Development, Human Resource Development, and Organizational Structure" which was scored on a Likert scale from 1 to 5 and scores in each section were 8 to 40, 10 to 50, 8 to 40 and 6 to 30, respectively. Its content validity was also confirmed by experts and its reliability was confirmed by Cronbach's alpha coefficient of 0.78. Then the impact of research ethics and its different components on the quality of research was evaluated based on the score obtained. Data were analyzed using SPSS21 and PLS software, T-test, ANOVA, Tukey post hoc test and multivariate regression. $P < 0.05$ was considered significant.

Results

From 320 samples, 223 (69.7%) were male and 97 (30.3%) were female. Two individuals (0.6%) were single and 318 (99.4%) were married. Also 59 (18.5%) had work experience less than 10 years and 75 (23.4%) had work experience more than 20 years. Forty-four (13.1%) were under 45 years of age and 81 (25.3%) were over 50 years. In addition, 205 (64.1%) were assistant professor and 19 (5.9%) were professor (Table 1).

Table 1. Frequency distribution and percentage of demographic characteristics of the subjects

| Variables | N(%) |
|------------------------------|-----------|
| Gender | |
| Male | 223(69.7) |
| Female | 97(30.3) |
| Marital status | |
| Single | 2(0.6) |
| married | 318(99.4) |
| History of employment | |
| Less than 10 years | 59(18.5) |
| 10-20 years | 186(58.1) |
| More than 20 years | 75(23.4) |
| Age | |
| Less than 40 years old | 42(13.1) |
| 40-50 years old | 197(61.6) |
| More than 50 years old | 81(25.3) |
| Academic Rank | |
| Instructor | 35(10.9) |
| Assistant professor | 205(64.1) |
| Associated professor | 61(19.1) |
| Professor | 19(5.9) |

Among the dimensions of research ethics, there was a significant difference only in trustworthiness between male and female faculty members ($p=0.03$). The mean score of trustworthiness in men was 24.20 ± 5.69 and in women was 25.72 ± 5.81 which indicates that trustworthiness in women is significantly higher than men, but in other aspects of ethics there was no significant difference between male and female faculty members (Table 2).

The results showed that there was no significant difference between male and female faculty members in all dimensions of research quality and mean 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) , Human Resource Development in men (25.31 ± 6.62) and in women (25.87 ± 5.83) and Organizational Structure in men (21.69 ± 5.46) and in women (22.04 ± 4.83) were more in females than males, but this difference was not significant.

Results of one-way analysis of variance (ANOVA) showed that there was no significant difference among faculty members according to their work experience in all dimensions of research ethics. The average trustworthiness in people with less than 10 years (24.91 ± 5.36) , responsibility in people with low work experience less than 10 years (35.72 ± 7.63) , professional commitment in people with over 20 years work experience (22.44 ± 5.12) , knowledge and information in people with work experience less than 10 years (24.98 ± 5.41) , perseverance and patience in people with work experience less than 10 years (18.20 ± 4.10) , observance of subjects' rights in people with less than 10 years' work experience (28.88 ± 6.16) , teamwork spirit in people with work experience less than 10 years (28.57 ± 6.05) , responsibility for publishing results in people with work experience less than 10 years (28.4 ± 6.12) , and attention to community needs in those with less than 10 years (20.94 ± 4.44) was greater, but this difference was not significant.

There was no significant difference between faculty members in terms of academic rank in research ethics and mean trustworthiness in assistant professor position (24.79 ± 5.66) , responsibility in associate professor position (35.91 ± 9.37) , professional commitment in associate professor position (23.18 ± 5.13) , knowledge and information in associate professor position (25.19 ± 5.73) , perseverance and patience in assistant professor position (17.98 ± 3.98) , observance of subjects'

rights in assistant professor position (28.6 ± 6.23), teamwork spirit in the assistant professor position (28.25 ± 6.14), responsibility for dissemination of the results in the assistant professor position (28.54 ± 6.04) and attention to community needs in the assistant professor position (21.22 ± 4.55) was more but this difference was not significant.

The results of multivariate regression test showed that among the dimensions of research ethics, trustworthiness, responsibility, subject rights and teamwork spirit had a positive and significant effect on research quality ($p < 0.05$). But the impact of professional

commitment, knowledge and information, perseverance and patience, responsibility for dissemination of results and attention to community needs on the quality of research was not significant.

Trustworthiness also had the greatest impact on research quality ($\beta = 0.340$). The R^2 value (0.68) indicated that about 68% of the variance of the research quality score was explained by the dimensions of research ethics (Table 3). The results also showed that research ethics had a positive and significant effect on the quality of research of faculty members of a large area of the country (Fig 1).

Table 2. Comparison of dimensions of research ethics by gender Variable

| Variable | Male Mean \pm SD | Female Mean \pm SD | P-value |
|--|-----------------------|-------------------------|---------|
| Trustworthiness | 24.20 \pm 5.69 | 25.72 \pm 5.81 | 0.03 |
| Responsibility | 34.77 \pm 7.97 | 36.32 \pm 8.26 | 0.113 |
| Professional commitment | 22.17 \pm 4.93 | 22.57 \pm 5.17 | 0.514 |
| Knowledge and information | 24.62 \pm 5.13 | 25.86 \pm 5.66 | 0.055 |
| Perseverance and patience | 17.64 \pm 3.97 | 18.27 \pm 4.23 | 0.200 |
| Observance of subject rights | 28 \pm 6.29 | 29.03 \pm 6.55 | 0.189 |
| Teamwork spirit | 27.8 \pm 6.24 | 28.42 \pm 6.53 | 0.422 |
| Responsibility to dissemination of results | 27.83 \pm 6.27 | 28.90 \pm 6.57 | 0.169 |
| Attention to community needs | 20.62 \pm 4.72 | 21.59 \pm 4.79 | 0.094 |

Table 3. Results of Multivariate Regression Test to Determine the Impact of Research Ethics on Research Quality

| Variables | β | T | P-value | F | P-value | R | R^2 |
|---------------------------------------|---------|---------|---------|--------|---------|-------|-------|
| Fixed number | - | 4.059 | 0.000 | | | | |
| Trustworthiness | 0.34 | 4.311 | 0.000 | | | | |
| Responsibility | 0.204 | 2.655 | 0.008 | | | | |
| Professional commitment | 0.068 | 0.919 | 0.359 | | | | |
| Knowledge and information | -0.104 | 0.1.112 | 0.267 | 73.035 | 0.000 | 0.824 | 0.68 |
| Perseverance and patience | 0.084 | -0.712 | 0.477 | | | | |
| Observance of subjects' rights | 0.254 | 2.071 | 0.039 | | | | |
| Teamwork spirit | 0.167 | 2.114 | 0.035 | | | | |
| Responsibility for publishing results | 0.006 | 0.058 | 0.953 | | | | |
| Attention to community needs | 0.022 | 0.215 | 0.83 | | | | |

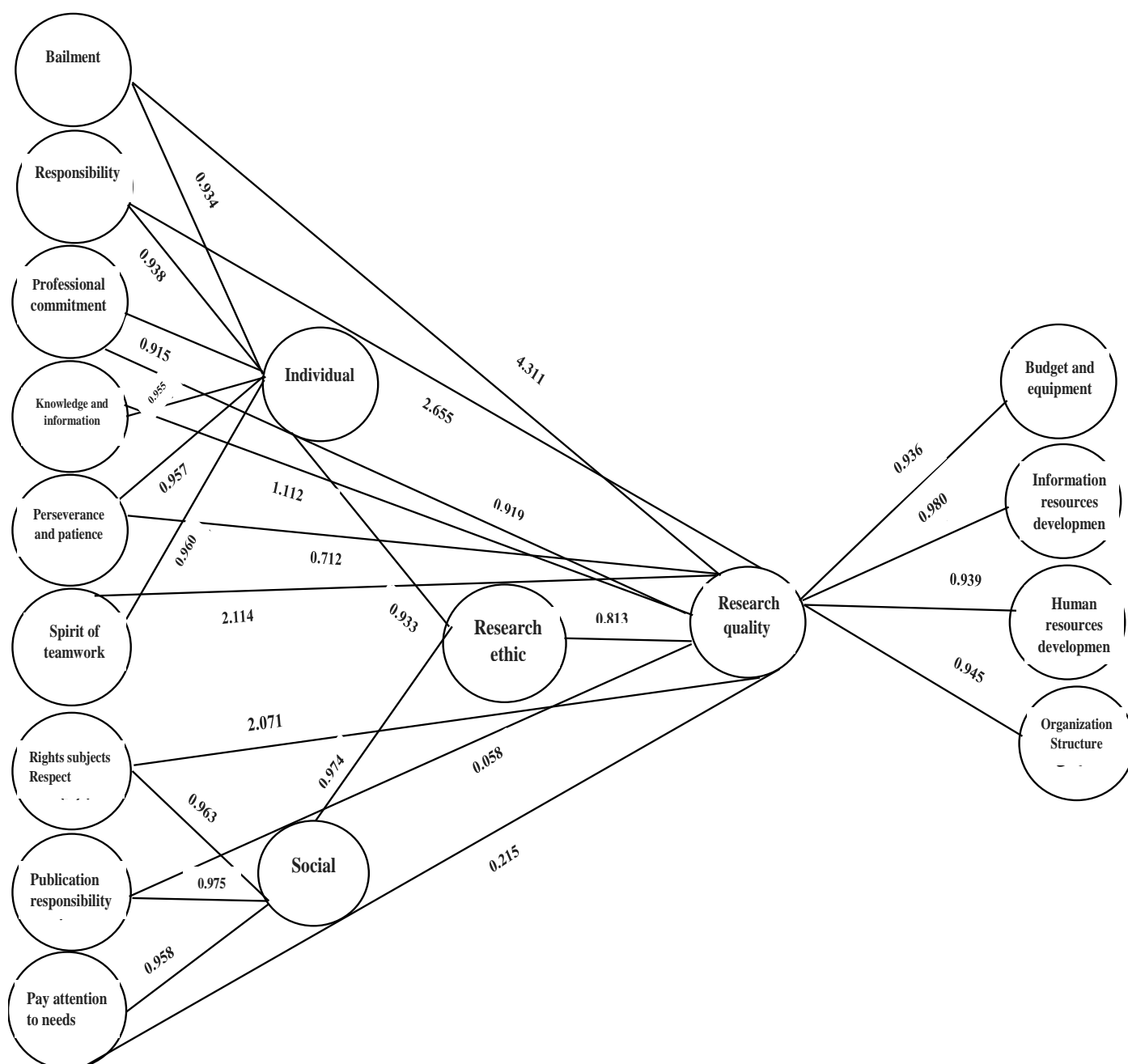


Figure 1. Structural model in standard estimation of path coefficients

Discussion

The results of this study showed that among the dimensions of research ethics, trustworthiness, responsibility, subject rights and teamwork spirit had a positive and significant effect on research quality. This finding is consistent with the findings of Wayne's research (14). Wayne's study showed that research ethics influenced the quality of research at the university and teachers could teach academic programs with ethical principles. According to the findings of the present study, it can be said that the research ethics observation implies that the researchers are familiar with the processes, principles and standards of the research ethics, and that they conduct their research with respect

to the principles of respect, accuracy, dignity, confidentiality and ethics matters. In the study of Sabet et al., the results of the model test showed that the conscientiousness variable had a direct and significant effect on the research ethics variable, as well as the research ethics and its profound effect on research quality (15). In addition, Dag and colleagues concluded that honesty, authenticity, scientific and social value in research are important characteristics of research quality (16). Imaz et al. also stated that adherence to ethical principles in conducting research is important in increasing the quality of research (8). In this study trustworthiness, responsibility, subject rights and teamwork spirit had a positive and significant effect on

research quality. Sabet and colleagues demonstrated that among the variables of the study, the variables of conscientiousness, perceived severity of punishment, research ethics training and religious attitude had the most effect on research ethics, respectively, but research self-regulation had no impact on research ethics (15). Moreover, Sajadian and colleagues showed that there is a positive and meaningful relationship between research ethics and its dimensions (respecting the rights of the researcher, not harming the owners of the work, respecting justice in the research) by sharing knowledge among the educators of the Intellectual Development Center for Children and Youth in Tehran Province (17). Wynn et al, also showed that adherence to ethics in research has an impact on the quality of university research. Teachers can teach academic programs in accordance with ethics (14).

According to study of Brito et al., the quality of research can be measured by citation (18). In their research, Ghanbari and colleagues showed that students' perceptions of adherence to ethical standards and its dimensions (in research professors) were evaluated as desirable. Professional ethics also had a significant and positive impact on quality assurance (19); Yamni Dozi Sorkhabi et al showed that students in the process of preparing a dissertation adhere to the components of research ethics (trustworthiness, professional commitment) (20). Matlabifard et al. also indicated that individual characteristics in research include

commitment, honesty, motivation, perseverance, patience, and teamwork spirit. Professional responsibilities of researchers include responsibility to the community, supporters, colleagues, subjects, research subject, other researchers, data collection and analysis, and dissemination of findings (21). In this research, individual aspects of research ethics were considered as trustworthiness, responsibility, professional commitment, knowledge and information, perseverance and patience, and teamwork spirit and responsibility for dissemination, observance of rights and attention to community needs in the future were considered as social aspects. The results of this study showed that research ethics had a positive and significant effect on research quality of faculty members of medical sciences universities. Therefore, it is suggested that due to the increasing growth of research in society and the importance and necessity of research as well as the development and advancement of higher education centers, the observance of ethics in research should be emphasized as one of the essential elements necessary for the preservation and development of science and knowledge.

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