

Nudge Management in Healthcare Organizations: Causes and Motives

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Abstract

Background: A nudge can cause favorable behavioral changes in line with organizational goals and even increase productivity, satisfaction with, and trust in healthcare organizations. Nurses must make sound and fast decisions to meet patient needs and perform the necessary interventions as they have limited time to stop and logically analyze what actions they must take. Besides, sometimes people make decisions that are not bad for them, but they need to receive help to make better choices. Hence, nudging strategies can help them to make more effective decisions. To this end, the present study aimed to identify the reasons for using nudges in healthcare organizations.

Methods: Following interpretive philosophy and a qualitative approach, the present study sought to identify the reasons for using nudges. This study was conducted using a grounded theory approach based on Colaizzi's seven-step data analysis method. The research population included nurses working in private and public hospitals in Kerman. The participants were 15 nurses who were selected through purposive sampling until the data were saturated.

Results: Data analysis showed people tend to use nudges for individual reasons such as minimizing mistakes at work, reducing stress, valuable changes, decreasing the risk of criticism, reducing the halo effect and stereotyping errors, preserving the personality, not losing freedom, cognitive limitations, increasing the probability of accepting the message, and maintaining relationships; managerial reasons such as flexible and gradual nature of nudges, risk management, extra-role behaviors, safety, the elimination of unnecessary formalities, ease of use, cost-effectiveness, and behavior management; and finally organizational reasons such as increasing productivity, creating a favorable climate, promoting a culture of criticism, win-win strategy, increasing trust in the organization, and risk management tools.

Conclusion: The data in this study revealed that staff in healthcare organizations tend to use nudges for individual, managerial, and organizational reasons. An awareness of these reasons helps healthcare organizations to use nudging strategies in emergencies and in a limited period to change employees' behavior in line with organizational goals and policies.

Keywords: Nudge management, Healthcare organizations, Causes, Motives, Grounded theory

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Introduction

A nudge is a set of ideas and a way of thinking (1) which describes how small interventions can encourage people to make different decisions (2). Human resources play a vital role in achieving healthcare productivity and affect the overall productivity of nurses, as one of the most productive people in healthcare organizations, leading to a change in the cost of services (1). Studies have shown that the costs of sick leave in organizations have increased several times in four years (2), leading to decreased productivity. Recent studies have indicated that if sickness-related absences are estimated in a company's profit and loss statement, the costs associated with sick

leaves are likely to exceed 15% (3). Following unfavorable outcomes and elevated levels of absenteeism, managers should find out the financial and non-monetary motives and use them to nudge employees to promote healthier lifestyles and productivity (4). Sometimes, people do not pay full attention to their options, tend to follow a path with less resistance, lack perfect information, do not have unlimited cognitive abilities or clear and well-defined preferences, or do not have complete self-control. Hence, they make decisions that are not bad, but they need to receive help to make more effective decisions (5) through the choice architecture and nudging.

Nurses are one of the most vital elements of the



workforce in a country and play an essential role in the health and safety of patients. However, many risks in hospital settings threaten their health (6). Since nurses have to work around the clock with patients, the nursing profession is an exhausting and challenging profession associated with stress and psychological distress. Any inattention to the functions of nursing staff leads to a decrease in the quality of nursing services provided to patients (7). Research results have shown that the nursing community is at the forefront of patient care, and their health is always threatened (8). A look at healthcare services throughout the world shows that nurses provide at least 50 to 80% of these services (9). Organizations, especially managers, can use nudges effectively to guide people's behavior toward better choices and healthier lives. The functions of the nursing profession are closely associated with the health of people in the community. Moreover, nurses can play a valuable role in preventing some diseases if they have physical and mental health and the necessary knowledge (10). Since unawareness of nurses not only causes problems for themselves but also indirectly influences the quality of nursing services and public health by affecting the services provided by them, providing nudging strategies for this group of service providers enhances their awareness and also improves the quality of their services and, consequently, public health. Thus, as nursing profession has challenging and stressful functions and nurses face many problems including patient death, perhaps the smallest mistake in this profession causes irreparable damage to the individual nurse and others. Accordingly, given the sensitive role of medical and health centers in the health of communities, this study aims to identify the causes of using nudges in healthcare organizations.

Theoretical Framework

Nudges and nudge management

Traditional economics assumes that humans, as rational beings, make decisions to maximize their well-being. Besides, behavioral economics relies on cognitive psychology research to adjust assumptions and teaches that humans have bounded rationality, so they make biased decisions that are sometimes against their interests (11). Given that people should be free to make their own choices (5) and as nudges offer a set of seemingly simple and low-cost solutions that do not require legislation, nudges can be applied to solve a broad range of behavioral problems (12). Consequently, they can change people's behavior without limiting their freedom of choice. As Mols et al (4) state, "a nudge" indicates a method and an intervention to change behavior. Thaler and Sunstein (13) defined a nudge as "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives". Nudges are not decrees or orders.

People should be free to make their own choices, but they need assistance from an invisible hand (a nudge) to guide them to the right choice. Organizations use different types of nudges to manage their choice architecture. Nudge management means managers must decide which nudge to use and how to use it (5). Nudge management is a management approach in which the nudge theory is used in an organization to best use the unconscious behavior of employees in line with organizational goals (3). Efforts are taken by making simple and seemingly insignificant changes in the environment. Such efforts have a significant impact in inducing behavior change in employees and increasing their productivity. Thaler and Sunstein (13) stated that "nudge management is a management approach that applies insights from behavioral science to design organizational contexts to optimize fast thinking and unconscious behavior of employees in line with the objectives of the organization". A nudge aims at changing the choice architecture, that is, the environment in which the choice is made, so that people working in this environment are less likely to show risky behaviors and generally make the best possible decision in any situation. Accordingly, this study seeks to identify the reasons for using nudges in healthcare organizations.

Methods

The present study was carried out following interpretive philosophy and a qualitative approach. Accordingly, the data collected through interviews were analyzed using theoretical and substantive coding. Since this study aimed to identify the reasons for using nudges, it employed a grounded-theory approach based on Colaizzi's seven-step data analysis method. This approach expands the researcher's horizons for data analysis. It does not have predetermined assumptions but discovers the participants' main concerns in the research domain (14).

The research population consisted of nurses working in private and public hospitals in Kerman. The reason for choosing nurses was the important position of the nursing profession and the fact that nurses are in charge of performing most of the tasks in hospitals. Secondly, nurses' behaviors affect patients and members of the health community. The interviewees were 15 nursing professors and experts from selected hospitals. They had theoretical and practical knowledge about nudge management. The interviewees were selected via theoretical sampling from experts with at least 5 years of managerial and clinical experience and a Ph.D. degree. The rationale for selecting nursing professors and experts was that they knew the reasons for using nudges. Moreover, they were experienced in applying nudges in clinical and managerial settings. The interviews continued until the data were saturated. The collected data were analyzed by continuous comparisons in the coding process. The two main stages in the emergent coding approach are substantive

coding (which involves open and selective coding) and theoretical coding. The data collected in this study were analyzed using open and selective coding with MAXQDA 2020 software. The trustworthiness of the research procedure and the findings was checked using the four criteria (credibility, transferability, dependability, and confirmability) proposed by Lincoln and Guba (15). To enhance the transferability of the findings, the researcher described the research procedure and presented a detailed account of the sampling and data analysis processes. Furthermore, to ensure the credibility of the study, the data collection and analysis were reviewed and monitored by subject-matter experts. In addition, to ensure the confirmability of the data, interpretations, and findings were reviewed and revised in detail several times.

Results

As stated earlier, the interviewees were selected via theoretical sampling from experts who had at least 5 years of managerial and clinical experience and a Ph.D. degree. Table 1 displays the participants' demographic characteristics:

Features of a nudge

The interviewees defined nudges and specified their features as shown in primary and secondary codes in Table 2. Accordingly, a nudge was defined as an impulse from person A to person B that should have characteristics such as being planned and purposeful, ethical, effective, and efficient, and it should change and guide behavior.

Reasons for using nudges

Data analysis showed that nudges are typically used for individual, managerial, and organizational factors. According to the data, people tend to use nudges for individual reasons such as cognitive constraints, minimizing mistakes at work, increasing the probability of accepting the message, and maintaining relationships; managerial reasons such as behavioral management, flexibility, ease of use, and cost-effectiveness; and finally organizational reasons such as cultural and strategic reasons. Table 3 presents examples of the participants' statements:

Following the grounded theory and using Colaizzi's seven-step analysis method, the present study sought

to identify the reasons for using nudges in healthcare organizations. Data analysis showed that people in healthcare organizations tend to use nudges for individual, managerial, and organizational reasons. According to William Glaser, human behavior is like a machine that is made up of four wheels; feeling, physiology, acting, and thinking. The two front wheels consist of acting and thinking, which are aligned with each other, and the rear wheels are feeling and physiology, and they are aligned with the movement path of thinking and acting (16). A nudge is defined as anything that causes a behavior change. Nudges can cause favorable behavioral changes in line with organizational goals and even increase productivity, satisfaction with, and trust in healthcare organizations. Despite the importance of nudges and their widespread applications for the individual and the organization, no study has addressed their role in healthcare organizations. Figure 1 shows the reasons for using nudges in healthcare organizations:

Discussion

A review of the literature showed that nudges have not been addressed qualitatively. Furthermore, most of the studies in the literature have mainly presented general descriptions of nudges. Researchers were looking for a way to motivate employees to choose a healthier lifestyle, and they found several main obstacles and different nudges to promote employee health and reduce sick leave (17). Cai conducted a systematic review of nudge literature and its applications in different fields (18). Möllenkamp et al investigated the effectiveness of nudges in improving the self-management of patients with chronic diseases through a systematic literature review (19). de Haan and Linde investigated the effect of defaults as nudges on performance (20). Ebert and Freibichler discussed the use of behavioral sciences (nudge management) to increase the productivity of knowledge workers with a descriptive

Table 1. The participants' demographic data

Gender	Education	Academic rank	
Female	Ph.D.	Lecturer	2
		Assistant professor	10
		Associate professor	1
Male	Ph.D.	Assistant professor	2

Table 2. Characteristics of a nudge

Primary codes	Secondary codes
Be planned, thoughtful, prearranged, purposeful, systematic, derived from research, serious, frank and straightforward, sincere, managed, timely, and gradual, to have an executive guarantee, to be scheduled and effective	Planning and purposefulness
Be intensive and rigorous, well designed, assigned to a specific unit and department, presented at the right time, have clear and specific rules, be intelligent, intentional, not random, purposeful, offered daily, novel, organized, and show the distance to the goal	
It should be ethical, originate from morality, be the best option, comply with the code of ethics, fit moral principles, be positive, have good and benevolent intentions, and be safe and genuine.	Ethics
It should alert the person, be informative, preventive, effective, transformative, efficient, impulsive, cost-free, high-speed, low-cost, and lead to behavior change outcomes	Effectiveness

Table 3. The reasons for using nudges

Examples of the participants' statements	Primary codes	Secondary codes
Many times, someone who is working as a member of the healthcare team in the health system actually feels some needs. At this time, they need to be nudged by someone to engage in behavior change because the person observes its outcomes. Moreover, as everyone is struggling with these problems, they change their behavior when they see the results of hard work, and both the nurse and patient benefit from behavior change caused by nudging. At the same time, it can increase the productivity of the whole organization, in turn improving the patient's satisfaction. One of the measures of credibility of hospitals is patient satisfaction. It is one of the achievements of nudge management.	The patient and nurse benefit from nudging outcomes Win-win strategy Enhancing the productivity in the whole organization Improving the trust in the hospital	Individual reasons Organizational reasons
Wrong eye surgery was performed in the hospital. Nudges were used to reduce nursing errors in the eye operating room and made us minimize this error. We did not just rely on the doctor's instructions and the information from the medical records to determine the surgical site. We asked the patient and the caregiver to find the surgical site. This was a free-cost nudging strategy. However, it led to behavior change in the operating room, increased productivity, reduced the stress of making mistakes, and most importantly, improved the quality of service offered to the patient.	Nudging through listening to other's experiences Being cost-free Minimizing nursing errors	Managerial reasons Individual reasons
Medication errors are the most common errors in the world. Injecting two similar drugs, one of which is dangerous, should not happen even once. The nurses came up with an idea and put a red label on this dangerous drug not to confuse it with other drugs. This red label on the medicine was a nudge. We are looking to reduce mistakes at work and provide more effective care to the patient, and we need to keep our minds open, so a nudge can be an effective tool.	Reducing mistakes at work and providing more effective care to patients	Individual factors
The optimal use of human resources requires using nudges in the organization because nurses need to comply with many issues not mentioned in the bylaws and regulations. Thus, nudges can help comply with them and change the behavior in the right direction. These issues can be brought to notice through nudges.	Optimal use of human resource capabilities	Managerial reasons
In the hospital, in addition to selecting top nurses, some nurses are introduced as moral nurses. This is a nudge strategy. This is very important for the organization; it is not just that you do your job according to your job description.	Reminding organizational priorities through planned nudges	Managerial reasons
This profession is connected with other people's lives, so even small nudges can have significant effects.	Making decisions in emergencies as quickly as possible	Organizational reasons
Nudges are used in all stages and processes of behavior management. Nurses who have halo or stereotype errors towards some patients, and these errors affect their service delivery (to an addicted patient) can change their behavior via a nudge by the supervisor and even provide extra-duty services to the patient.	Correcting and changing cognitive errors	Individual reasons
A nudge has a subtle and artistic quality. Where the risk of criticism is very high and can have irreparable effects, a nudge can be used to reduce the risk of criticism and prevent a person from doing the wrong behavior.	Risk management	Managerial reasons
Sometimes, because there are veils of modesty and shyness between people, they use a nudge to change the person's behavior while maintaining the relationship and conveying the message.	Maintaining interpersonal relationships	Individual reasons
When nurses make many mistakes in injecting a specific drug, they need to be alerted through nudges.	Frequent behaviors imposing financial and life costs	Managerial reasons
A nudge can cause a change in behavior by showing a video, recommendations from scholars, and even the character of the person who nudges.	Easy use and management of nudges without the need for excessive formalities	Managerial reasons
People who love their work and want to perform at their best all the time are waiting for even a small hint to improve themselves, and a nudge can fulfill this role well.	Self-fulfilling and perfectionist people	Individual reasons
A nudge is flexible and gradual and can be applied at any time and place to different people with different degrees and cause behavior change.	Flexibility and gradualism	Managerial reasons
When we receive a warning, there is a risk associated with it, but a nudge is safe. The difference between a nudge and a warning is that the former is safe while the latter is dangerous.	Safety	Managerial reasons
A nudge has an expiration date. We cannot always use a nudge in one generation or two generations or for a group of people because it becomes repetitive and habitual and has no effect.	Being expired	Managerial reasons
People have cognitive limitations in absorbing, gathering, storing, and analyzing information. Understanding and rereading this information lead to behavior and choice. People have various limitations, and a nudge can, to some extent, help them in choosing the right option.	Removing people's cognitive limitations	Individual reasons

method (6). Sunstein presented a very short guide of nudges along with a list of the most important nudges (21). Studies conducted in Iran pointed to the atmosphere of non-criticism in healthcare organizations and hospitals to account for the main (cognitive) themes and the sub-themes of organizational pessimism (22). Accordingly, the data in this study showed that managers and employees can use nudges to overcome the unfavorable

organizational climate, establish a friendly atmosphere, and help employees get the right message. Researchers acknowledged that self-efficacy plays an important role in nurses' effective clinical and care decision-making (23). Likewise, the findings of this study revealed that self-efficient people are more receptive to nudges than others and look for the smallest hint to achieve excellence and development. Moreover, some researchers found that the

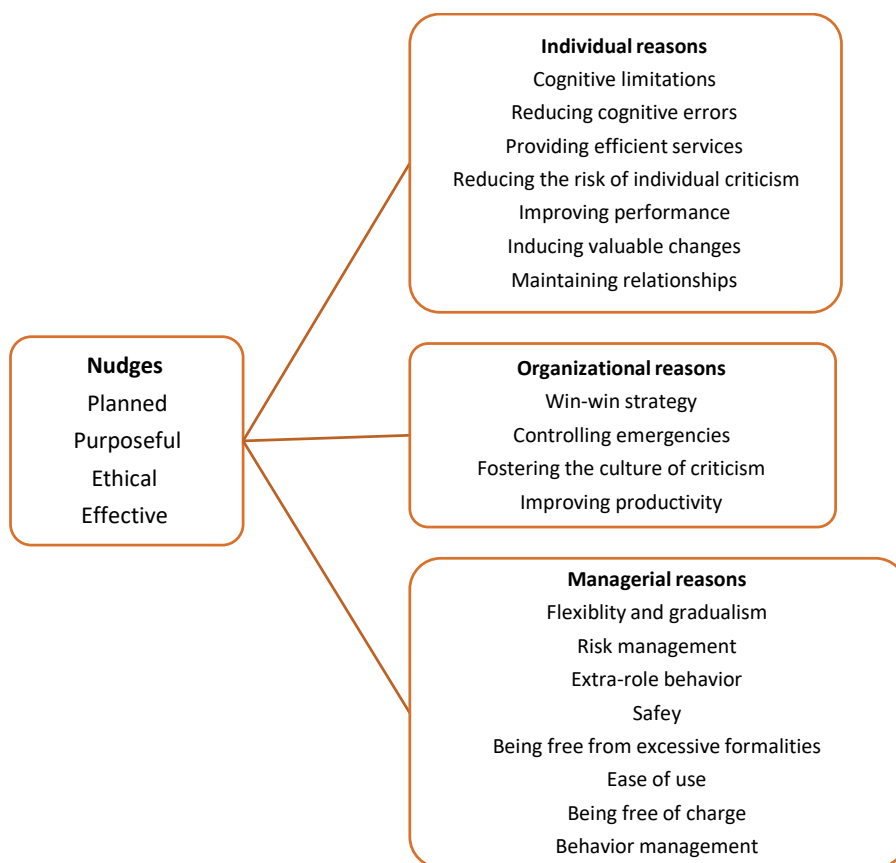


Figure 1. Reasons for using nudges in healthcare organizations.

theory of virtue ethics assumes that to promote ethical behavior and then professional ethics, looking into the behaviors of virtuous people who are referred to by the organization and employees as role models and trying to introduce them can be helpful for other employees (24). The participants in the present study pointed out that one of the characteristics of nudge givers is that they are role models, and one of the features of nudges is their ethical character. They also added that to promote ethical behavior and professional ethics, nurses can be introduced and appreciated as ethical nurses so that others will know that morality is also important to the organization. According to nurses, the problems related to policies, laws, and regulations are some of the obstacles to knowledge dissemination (25). To overcome these obstacles, nudges can be used to reduce complexities, disseminate knowledge more effectively, and avoid redundant administrative procedures. Keshvari et al introduced resistance to change as one of the challenges of optimal human resource management relevant to knowledge-related factors (26). The data in the present study showed one of the most significant outcomes of nudge management is inducing behavior change in individual employees. The participants stated that nudges can increase awareness, reflection, thinking, and ultimately change behavior without resistance because both the nudge giver and the nudge receiver perceive the

outcomes of the nudge and understand its benefits.

Conclusion

The present study provided a detailed analysis of nudges and emphasized that nurses need to receive training about nudging strategies. Since people in the Iranian culture tend to stand on ceremony and seek to maintain relationships, using nudges can play an effective role in changing behavior. As pointed out by the participants, if a nudge has the desired characteristics such as being purposeful, planned, and ethical, and the nudge giver has positive and benevolent intentions, it can induce behavior change in line with the intended goals and create a friendly atmosphere for both the nudge giver and the nudge receiver. In addition, since in healthcare settings such as hospitals, which are involved with all kinds of infectious diseases, negligence and small mistakes can be dangerous for both the nurse and the patient, an awareness of effective nudging techniques and related mechanisms can be very helpful in improving the productivity of medical staff especially nurses. Moreover, researchers need to investigate nudge management with other qualitative methods and expand the literature in this field. Since the present study was conducted only using qualitative methods, the model developed in this study needs to be tested quantitatively. Besides, the relationships between different variables should be examined in future studies.

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Competing Interests

The authors declared no conflict of interest.

Ethical Approval

IR.UM.REC.1400.038 by the Ethics Committee in Research of Ferdowsi University of Mashhad.

References

- Kahneman D. Thinking, fast and slow. In: Farrar, Straus and Giroux. American Psychological Association; 2011.
- Wilkinson TM. Nudging and manipulation. *Polit Stud (Oxf)*. 2013;61(2):341-55. doi: [10.1111/j.1467-9248.2012.00974.x](https://doi.org/10.1111/j.1467-9248.2012.00974.x).
- Doostmohammadi H, Mirzaee A, Safavi M. The study of the relationship between job stress and productivity among nurses in selected hospitals of Islamic Azad University. *Medical Science Journal of Islamic Azad University-Tehran Medical Branch*. 2018;28(4):325-32. doi: [10.29252/iau.28.4.325](https://doi.org/10.29252/iau.28.4.325). [Persian].
- Mols F, Haslam SA, Jetten J, Steffens NK. Why a nudge is not enough: a social identity critique of governance by stealth. *Eur J Polit Res*. 2015;54(1):81-98. doi: [10.1111/1475-6765.12073](https://doi.org/10.1111/1475-6765.12073).
- Thaler, R. H. Behavioral Economics: Past, Present, and Future. *American Economic Review*. 2016. 106 (7):1577-1600.
- Ebert P, Freibichler W. Nudge management: applying behavioural science to increase knowledge worker productivity. *J Organ Des*. 2017;6(1):4. doi: [10.1186/s41469-017-0014-1](https://doi.org/10.1186/s41469-017-0014-1).
- Das J. Nudge Management as an Essential Behavioural Science Application to Improve Performance Management for Higher Productivity: A PSU Perspective. 2018. <https://www.abssummit.in/abs-summit2018/pdf/Nudge-Management-Jhilmil-Das.pdf>.
- Leonard TC, Richard H, Thaler, Cass R, Sunstein, Nudge: improving decisions about health, wealth, and happiness. *Const Political Econ*. 2008;19(4):356-60. doi: [10.1007/s10602-008-9056-2](https://doi.org/10.1007/s10602-008-9056-2).
- Ghasemi F, Akbari H, Akbari H, Adibzadeh A. Designing and validating a questionnaire for assessing the safety climate among nurses. *J Mil Med*. 2018;20(5):488-99. [Persian].
- Mosadeghrad AM. Relationship between nurses' knowledge about ergonomics and their job injuries. *J Shahrekord Univ Med Sci*. 2004;6(3):21-32. [Persian].
- Ehsani, H. Nishabur nurse's death nudge, Mehr news agency, 2015 Jan. Available from URL: <http://www/cdc.gov/ncidoc/EID/eid.htm>
- Heidari A, Zardosht R. Critically evaluation widely published newspapers in relation to nursing in 1392. *Hakim Health Syst Res*. 2016;19(1):4-12. [Persian].
- Thaler RH, Sunstein CR. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Penguin Books; 2008.
- Glaser BG, Holton J. Remodeling grounded theory. *Hist Soc Res*. 2007(19):47-68.
- Lincoln YS, Guba EG. *Naturalistic Inquiry*. SAGE Publications; 1985.
- Kan MM, Parry KW. Identifying paradox: a grounded theory of leadership in overcoming resistance to change. *Leadersh Q*. 2004;15(4):467-91. doi: [10.1016/j.leaqua.2004.05.003](https://doi.org/10.1016/j.leaqua.2004.05.003).
- Zarifnejad S, Johansson P. *Nudge Management; A Way to Motivate Healthier Behavior*. School of Business, Society and Engineering; 2018.
- Cai CW. Nudging the financial market? A review of the nudge theory. *Account Finance*. 2020;60(4):3341-65. doi: [10.1111/acfi.12471](https://doi.org/10.1111/acfi.12471).
- Möllenkamp M, Zeppernick M, Schreyögg J. The effectiveness of nudges in improving the self-management of patients with chronic diseases: a systematic literature review. *Health Policy*. 2019;123(12):1199-209. doi: [10.1016/j.healthpol.2019.09.008](https://doi.org/10.1016/j.healthpol.2019.09.008).
- de Haan T, Linde J. *Nudge Lullaby*. CREED Working Paper. 2011.
- Sunstein CR. Nudging: a very short guide. *J Consum Policy (Dordr)*. 2014;37(4):583-8. doi: [10.1007/s10603-014-9273-1](https://doi.org/10.1007/s10603-014-9273-1).
- Mirzaei V, Rahimnia F, Mortazavi S, Shirazi A. Organizational cynicism of the nurses: a phenomenological study. *J Qual Res Health Sci*. 2018;7(1):88-102. [Persian].
- Alavi A, Bahrami M, Zargham-Boroujeni A. Perceived self-efficacy of care process management among pediatric nurses: a qualitative study. *J Qual Res Health Sci*. 2016;5(3):283-95. [Persian].
- Nikkhah Farkhani Z, Rahimniya F, Kazemi M, Shirazi A. An analysis of nurses ethical behavior toward persons accompanying a patient based on the theory of virtue ethics. *J Qual Res Health Sci*. 2015;3(4):363-76. [Persian].
- Zarrinsadaf N, Yazdanpanah A, Dehnavieh R. Barriers to knowledge sharing among nurses in educational hospitals of Kerman city, Iran. *J Qual Res Health Sci*. 2020;6(2):181-200. [Persian].
- Keshvari M, Shirdel A, Taheri Mirghaedi M, Yusefi AR. Challenges in the optimal management of human resources in hospitals: a qualitative study. *J Qual Res Health Sci*. 2020;7(4):349-60. [Persian].

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