


# A comparative study on patient safety culture among emergency nurses in the public and private hospitals of Tabriz, Iran

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## Funding information

This work was supported by the Tabriz University of Medical Science, Tabriz Health Services Management Research Center (grant numbers 59002, 2018).

## Abstract

**Aim:** To appraise patient safety culture in emergency departments of Iranian public and private hospitals.

**Design:** A comparative cross-sectional survey design was used.

**Methods:** This cross-sectional study was conducted from January–March 2019. For data collection, the Hospital Patient Safety Culture (HSOPSC) questionnaire was employed. The study sample comprised 256 participants. Independent *t* test and analysis of variance were performed to report the mean differences in total patient safety culture perception according to the participants' characteristics and according to hospital ownership.

**Results:** There was no significant difference in overall perceptions of patient safety culture in public and private sectors (2.94 vs. 2.84,  $p > .05$ ). There are no solid areas regarding patient safety found neither in public nor in private sectors. Out of 12 dimensions of patient safety culture, different perceptions of nurses working in public and private hospitals belonged to “Organizational learning” ( $t = 2.13$ ,  $p = .034$ ) and “Handoffs and transitions” ( $t = 2.91$ ,  $p = .004$ ). Regarding the participants' characteristics, no significant difference was observed as to the perspectives of nurses on patient safety culture. However, there was a meaningful difference in the attitudes of nurses working in public hospitals according to their employment status ( $t = 2.07$ ,  $p = .039$ ).

## KEYWORDS

emergency department, nurses, patient safety, patient safety culture, public and private hospitals

## 1 | INTRODUCTION

As one of the vital components of healthcare quality, patient safety is regarded as “the freedom from accidental injuries during the course of medical care; activities to avoid, prevent, or correct adverse outcomes

which may result from the delivery of healthcare” (Kohn, Corrigan, & Donaldson, 2000). Globally, patient safety is a significant public concern in all healthcare systems. Nevertheless, the fundamental issue in patient safety is not technically developing new systems, rather it is related to the cultural issue of establishing an environment where

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such systems thrive (Gandhi et al., 2018). Developing a positive patient safety culture (PSC) makes healthcare professionals deal with patient safety as one of their prime responsibilities (Nieva & Sorra, 2003).

Several factors like attitudes, group values, competencies, perceptions and treatment, which indicates what type of commitment, style and proficiency the health providers' safety management should have, lead to the production of PSC (Sorra & Dyer, 2010). It has been claimed by Institute of Medicine (IOM) that developing PSC is vital for staff in health care as it is required to hinder the unintentional and haphazard errors, which may result in hurting patients (Wang et al., 2014).

## 1.1 | Background

Several previous studies on PSC have centred on developed countries rather than developing countries (Jiang et al., 2019). In addition, developing a safety culture as a foundation to enhance healthcare quality in developing and transitional countries has been pronounced by the World Health Organization (WHO, 2011).

The first initiative in PSC is to assess the current culture in a given healthcare organization (Fleming & Wentzell, 2008). The report, "To err is human," by the Institute of Medicine (IOM) in 1999, led to the advent of a variety of initiatives and instruments so as to measure and enhance PSC (Kohn et al., 2000). As a component of its aim to enhance patient safety and health quality, the Agency for Healthcare Research and Quality (AHRQ) devised the Hospital Survey on Patient Safety Culture (HSOPSC) in 2004, as an assessment tool for hospitals. The HSOPSC is employed to discover strengths as well as the fields, which should be promoted so as to improve patient safety, test PSC trends over time and carry out peer comparisons (Sorra, Gray, & Stregle, 2018), which has been extensively used worldwide (Famolaro et al., 2016; Lee, Phan, Dorman, Weaver, & Pronovost, 2016).

As a developing country, Iran with a population of about 81.16 million comes across with numerous medical and health service tasks, of which fortifying patient safety and enhancing medical care quality are of importance. A recent systematic review in Iranian hospitals has revealed that PSC was poor and demanded healthcare managers and providers to pay special head to it (Behzadifar, Behzadifar, Jahanpanah, & Bragazzi, 2019). However, most of the survey about PSC has been conducted in public hospital rather than private (Moghri, Akbari, Rahimi, & Arab, 2013; Ravaghi, Marnani, Hosseini, & Takbiri, 2012; Rezapoor et al., 2012). Indeed, so as to identify the fields in need of improvement and/or redevelopment, the assessment concentrates on the employees and managers' perception and behaviour in a healthcare organization (Sorra et al., 2018).

Despite the fact that emergency departments (EDs) are obviously significant, there are only few studies that probe into PSC in emergency nurses. Emergency departments have a front position and are likely to be contacted by a high percentage of patients at their first contact with a hospital. In addition, its environment is normally described as a dynamic complex where errors often take place (Källberg, 2015). Therefore, the purpose of this study is twofold: first, to discover the perceptions of PSC among emergency nurses in public and private

hospitals of Tabriz, Northwest Iran, and second, to test whether such perceptions vary based on the demographic variables of nurses.

## 2 | METHOD

### 2.1 | Design

This comparative cross-sectional study was conducted from January–March 2019.

### 2.2 | Participants

The study population consisted of public and private sector nurses from all hospitals across Tabriz, Northwest Iran, working in EDs ( $N = 350$ ). Study participants were recruited by census sampling method according to inclusion criteria: having at least 1 year of work experience in ED, being a full-time nurse and willing to participate in the study.

### 2.3 | Measures

The HSOPSC questionnaire was used to collect data. The survey consists of 42 items. They measure all the 12 aspects of PSC: "communication openness, feedback and communication about errors, frequency of events reported, handoffs and transitions, management support for patient safety, non-punitive response to error, organizational learning continuous improvement, overall perceptions of patient safety, staffing, supervisor/manager expectations and actions promoting safety, teamwork across units and teamwork within units." The scale has been previously validated by means of Cronbach's alpha 0.82 (Moghri et al., 2012). It also has been used in several studies in Iran (Moghri et al., 2012; Raeissi, Reisi, & Nasiripour, 2018). In the present study, Cronbach's alpha of the questionnaire was 0.83.

### 2.4 | Ethical consideration

Ethical clearance was obtained from the Ethics Committee of Tabriz University of Medical Science (IR.TBZMED.REC.1397.272). A written informed consent was obtained from all participants who were willing to take part in the study to ensure voluntary participation. All the collected information was kept anonymous and confidential. The questionnaires were collected back on the same day.

### 2.5 | Data analysis

To analyse the data, Statistical Package for Social Science (SPSS) software, version 22, (IBM Corp.) was used. The respondents'

demographic characteristics were presented by means of descriptive statistics: frequency/percentages, mean and standard deviation (SD). Based on the user guide instructions published by the AHRQ, composite frequencies for the 12 patient safety dimensions were calculated (Sorra et al., 2018). Hence, the study centred on measuring the positive response rate (PRR) due to the fact that it indicated nurses' perspective on the variety of PSC domains in their setting. The formula introduced by the User's Guide of HSOPSC was employed to calculate PRR of the survey questions (Sorra et al., 2018).

In this study, positive responses were presented as "Agree/strongly agree" or "Most of the time/always" while the negative responses were presented as "Disagree/strongly disagree" or "Never/rarely." Accordingly, areas of strength were accentuated as those elements obtaining 75% of respondents' positive answers, or when about 75% of respondents varied in the reverse-worded item. Nevertheless, the areas identified to be capable of being used for development were the areas that were scored negatively by 50% or more of the interviewees. "Disagree/strongly disagree" or "Never/rarely" (when 50% of respondents did not agree with reverse-worded items) was used to show negative responses.

### 3 | RESULTS

Data were collected from 256 participants. The nurse sample from the public sector consisted of 30.6% males and 69.4% females, while the sample of private sector comprised 33.7% males and 66.3% females. Totally, the combined sample consisted of 31.6% males and 68.4% females. In the public sector sample, 71 were 31–40 (41.8%), and 69 have more than 10 professional experiences (40.6%). In the private sector sample, 43 were 31–40 (50.0%), and 39 have more than 10 professional experiences (45.3%). Most nurses in both sectors hold Bachelor's degree in nursing. Table 1 shows demographic characteristic of the study sample.

According to hospital ownership, the PRRs and Mean (SD) scores of overall PSC and 12 HSOPSC dimensions were calculated. Overall perception of PSC in public hospitals ( $M = 2.94$ ,  $SD = 0.64$ ) was found to be more than in private hospitals ( $M = 2.84$ ,  $SD = 0.69$ ); however, this difference was not statistically significant ( $t = -0.89$ ,  $p = .274$ ). The PRRs of all dimensions were all less than 75% in both public and private hospitals. The PRRs ranged from 20.4%–68.37% in public and from 18.2%–63.65% in private hospitals. In both public and private hospitals, the highest and lowest PRR belonged to "Teamwork within units" (PRR = 68.37% vs. 63.65) and "Non-punitive response errors" (PRR = 20.4% vs. 18.2). The independent  $t$  test showed no significant differences between sub-dimensions of PSC regarding hospital ownership except in two of them; a significant difference was found in the sub-dimensions "Organizational learning" ( $t = 2.13$ ,  $p = .034$ ) and "Handoffs and transitions" ( $t = 2.91$ ,  $p = .004$ ) (Table 2).

The independent  $t$  test and the bivariate analyses using analysis of variance showed that there were no significant differences

**TABLE 1** General characteristics of the sample according to hospital ownership

Characteristics	Public = 170 (66%)	Private = 86 (34%)	Total = 256 (100%)
<b>Gender</b>			
Male	52 (30.6)	29 (33.7)	81 (31.6)
Female	118 (69.4)	57 (66.3)	175 (68.4)
<b>Marital status</b>			
Single	82 (48.2)	52 (60.5)	116 (45.3)
Married	88 (51.8)	34 (39.5)	140 (54.7)
<b>Age (in years)</b>			
21–30	55 (32.4)	25 (29.1)	80 (31.3)
31–40	71 (41.8)	43 (50.0)	114 (44.5)
>40	44 (25.9)	18 (20.9)	62 (24.2)
<b>Professional experience (in years)</b>			
≤5	62 (36.5)	19 (22.1)	81 (31.6)
6–10	39 (22.9)	28 (32.6)	67 (26.2)
>10	69 (40.6)	39 (45.3)	108 (42.2)
<b>Education level</b>			
Associate degree	4 (2.4)	9 (10.5)	13 (5.1)
Bachelor's degree	93 (54.7)	54 (62.8)	147 (54.4)
Master's degree & PhD	73 (43.00)	23 (26.7)	96 (37.5)
<b>Employment status</b>			
Permanent	119 (70.0)	31 (36.0)	150 (58.6)
Contract	51 (30.0)	55 (64.0)	106 (41.4)
<b>Weekly work time (hr)</b>			
Normal (≤44)	98 (57.6)	40 (46.5)	138 (53.9)
Overtime (>44)	72 (42.4)	46 (53.5)	118 (46.1)

Note: All values are presented as N (%).

between PSC perception regarding respondents' characteristics ( $p > .05$ ). However, in public hospitals, there was a significant difference in perceived safety culture in nurses with permanent and contract employment ( $t = 2.07$ ,  $p = .039$ ) (Table 3).

### 4 | DISCUSSION

In this study, there was no significant difference in perceived PSC of nurses in public and private hospitals. Moreover, none of the areas were categorized as strength for patient safety. This finding proved that safety culture is not comprehensively established in these units, which was in line with a study carried out in Brazil (Macedo et al.,

**TABLE 2** Differences in Mean (SD) and PRR among emergency nurses working in the public and private hospitals

HSOPSC dimensions	Total		Public		Private		p-value <sup>a</sup>
	PRR (%)	Mean (SD)	PRR (%)	Mean (SD)	PRR (%)	Mean (SD)	
Events reported	52.23	3.31 (0.99)	49.6	3.23 (0.70)	57.37	3.46 (1.03)	.074
Perception of patient safety	43.85	3.21 (0.75)	43.65	3.18 (0.76)	44.2	3.24 (0.74)	.615
Manager expectations	65.80	3.75 (0.91)	67.47	3.76 (0.85)	62.43	3.73 (1.03)	.793
Organizational learning	42.87	3.17 (0.73)	44.4	3.24 (0.71)	39.82	3.03 (0.77)	.034*
Teamwork within units	66.80	3.79 (0.69)	68.37	3.81(0.65)	63.65	3.75 (0.79)	.591
Communication openness	38.07	3.04 (0.71)	37.95	3.08 (0.75)	38.4	2.97 (0.63)	.234
Feedback communication about errors	57.17	3.75 (0.83)	56.87	3.59 (0.80)	57.77	3.53 (0.87)	.553
Non-punitive response errors	19.66	2.54 (0.69)	20.40	2.58 (0.65)	18.2	2.43 (0.75)	.109
Staffing	54.17	3.42 (0.77)	52.93	3.44 (0.66)	56.6	3.38 (0.93)	.586
Management support for patient safety	48.23	3.27 (0.88)	47.5	3.27 (0.85)	49.7	3.30 (0.93)	.776
Teamwork across units	26.66	2.73 (0.89)	26.3	2.74 (0.87)	27.53	2.71 (0.92)	.800
Handoffs and transitions	22.30	2.68 (0.63)	18.6	2.47 (0.88)	24.1	2.79 (0.78)	.004*
Overall PSC	44.82	2.91 (0.66)	44.96	2.94 (0.64)	44.52	2.84 (0.69)	.274

Abbreviations: PSC, patient safety culture; PRR, positive response rate (PRR > 75% was defined as patient safety strength).

<sup>a</sup>The independent sample t test.

\*indicates significant value ( $p < .05$ ).

2016). Overall, the PRRs for the 12 PSC dimensions in EDs of public and private hospitals were 44.96% and 44.52%, respectively. The percentage is under 50.5% as reported in the published systematic review on country-level studies (Azami-Aghdash et al., 2015). Indeed, this finding shows that there is a need to enhance PSC in Iranian hospitals.

The highest domain score belonged to “Teamwork within units” in both sectors. This finding mirrors the findings of previous study by Ricklin, Hess, and Hautz (2019) among nurses and physicians of EDs in Switzerland and those of Macedo et al. (2016) at paediatric emergency nursing team in Brazil. In all these studies, teamwork in the ED was accentuated as an aspect with better positive evaluation indexes. Our results are also consistent with other studies in other wards than EDs in Kuwait (Ali et al., 2018), Iran (Khorami Markani, Mokhtari, & Khanalilo, 2018) and Turkey (Gozlu & Kaya, 2016). Although there are some cultural differences in these countries, the high percentage of positive responses suggests that the dimensions mentioned before provide them with the possibility of being identified as leading areas of safety culture in institutions in different contexts.

This finding strengthens the concerns by supervisors/ managers to enhance patient safety by resorting to suitable procedures and team contributions. However, our finding is different with the early results of meta-analysis (Behzadifar et al., 2019) of similar research in Iran and those of Ghahramanian, Rezaei, Abdullahzadeh, Sheikhalipour, and Dianat (2017) in public hospitals of Tabriz and other studies worldwide (Al-Mandhari et al., 2014; El-Jardali, Jaafar, Dimassi, Jamal, & Hamdan, 2010). All of the mentioned studies have shown that that “Organizational learning” had the highest

score among 12 dimensions. The differences in the results can be explained by the fact that they focused on a variety of hospital departments instead of EDs. Also, different response styles may be attributed to different hospital settings or different cultures across these nations (Johnson, Kulesa, Cho, & Shavitt, 2005).

The lowest score was for “Non-punitive response to error.” This may be because of the fact that emergency nurses are normally worried about punitive policies and punitive culture. And hence, it may lead to reduction in nurses' error reporting (Behzadifar et al., 2019). Challenges as to no punitive response to error were also highlighted in a previous study in Iran (Raeissi, Reisi, & Nasiripour, 2018). In a study carried out in the Netherlands, of 522 “unintended events” at 10 EDs, nurses reported 85% of events and about 83% of the reports were recorded by whom involved in the event (Smits, Groenewegen, Timmermans, van der Wal, & Wagner, 2009). Farmer (2016) puts emphasis on EDs that provokes a “no blame” environment, where the staff feel easy to take their mistakes for granted as they are not afraid of penalty or worry for job loss. Our finding is consistent with studies in Oman (Al-Mandhari et al., 2014), Taiwan (Chen & Li, 2010) and Saudi Arabia (Alahmadi, 2010), where non-punitive response to error had the lowest score. Therefore, when dealing with errors in organizations, a systematic approach may lead to a positive safety culture that discourages managers from taking any punitive action (Pronovost et al., 2006).

In the present study, “Organizational learning” dimension, the scores of emergency nurses working at the public hospital were significantly higher than those employed at the private hospital. The findings of this research were in line with the studies carried out by Karimi, Yaghoubi, Rahi, and Bahadori (2015) in Isfahan and Tapan,

**TABLE 3** Mean differences in total PSC perception according to the participants' characteristics

Variables	Public		Private	
	Mean (SD)	<i>p</i>	Mean (SD)	<i>p</i>
Gender <sup>a</sup>				
Male	2.86 (0.64)	.263	2.85 (0.67)	.968
Female	2.98 (0.63)		2.84 (0.71)	
Marital status <sup>a</sup>				
Single	2.99 (0.69)	.265	2.95 (0.56)	.205
Married	2.89 (0.59)		2.77 (0.76)	
Age <sup>b</sup>				
21–30	2.85 (0.092)	.211	2.89 (0.15)	.582
31–40	2.93 (0.074)		2.88 (0.11)	
>40	3.08 (0.091)		2.69 (0.14)	
Professional experience (in years) <sup>b</sup>				
≤5	2.85 (0.086)	.371	3.03 (0.14)	.337
6–10	2.96 (0.096)		2.72 (0.15)	
>10	3.01 (0.076)		2.84 (0.10)	
Education level <sup>b</sup>				
Associate degree	3.58 (0.18)	.141	2.78 (0.26)	.705
Bachelor's degree	2.98 (0.066)		2.79 (0.10)	
Master's degree & PhD	2.86 (0.079)		2.99 (0.096)	
Employment status <sup>a</sup>				
Permanent	3.01 (0.61)	.039*	2.93 (0.53)	.404
Contract	2.79 (0.70)		2.80 (0.77)	
Weekly work time (hr) <sup>a</sup>				
Normal (≤44)	2.95 (0.67)	.88	2.86 (0.79)	.922
Overtime (>44)	2.93 (0.61)		2.84 (0.60)	

Abbreviation: PSC, patient safety culture.

<sup>a</sup>The independent sample *t* test.

<sup>b</sup>Analysis of variance.

\*indicates significant value (*p* < .05).

Gayef, and Kaptanoğlu (2015) in Turkey, and in contrast to Arrieta, Suárez, and Hakim (2017) in Peru. An earlier Iranian study indicated that the organizational learning capacity of public hospitals was higher than private and social security hospitals (Farzianpour, Irani, & Foroushani, 2016), while, in other Iranian studies (Abbasi, Eydi, & Matin, 2014; Aghdasi & Befruei, 2009), the level of organizational learning capability in private hospitals was more in comparison with governmental hospitals.

Our result may be explained by the fact that while teamwork is an important factor in organizational learning (Ratnapalan & Uleryk, 2014) and, in the present study, the score of teamwork within and across the unit of public hospitals was higher than private one, this leads to a better organizational learning. Meanwhile, the number of

events reported in private hospitals is higher and there is a chance to learn from failures. Therefore, a hospital should clearly report the identified key safety indicators. Moreover, the results should be posted and updated on a timely regular basis. In addition, it is demonstrated that organizational learning is the summary of experiences and the process of new knowledge exploration. Hence, experiences of this type should be systematically integrated into the entire organization.

The participants in private hospitals scored more positively in "Handoffs and transitions" dimension than those of public hospital. This may be interpreted as an indication of the point that nurses working in public hospitals have higher workload (Yuwanich, Sandmark, & Akhavan, 2016). Moreover, it is possible that care transitions take place more often in EDs than in any other hospital setting (Pruitt & Liebelt, 2010). Particularly, there is occasionally clinical uncertainty and high acuity with patient transfers from EDs to other wards. Such a condition along with some cultural differences among various services can lead to misunderstandings or failures in communication and inadequate exchange of information at a critical stage in a patient's course (Hilligoss & Cohen, 2013; Nabors et al., 2010). Improvement of patient handoffs has been made a priority by the AHRQ and the Accreditation Council for Graduate Medical Education (ACGME) so as to provoke the enhancement of patient safety (McDonald, Schultz, & Chang, 2013; Nasca, Day, & Amis, 2010). Capacity building of medical staff with handoffs procedures and following standard protocols may lead to encourage a hospital's PSC (Lee et al., 2016). In addition, methods such as mentoring and leading by example with a clear emphasis on transitions of care are a key component for establishing a safety programme in a healthcare organization (Beach et al., 2012; Siemsen et al., 2012).

However, other sub-dimensions in public and private section were similar. In a study conducted by Tapan et al. (2015) in Turkey, difference among the additional dimensions according to hospital ownership was non-significant except for "Communication openness," while in Gündoğdu and Bahçecik's (2012) study, all dimensions showed significant difference in the mean scores based on hospital ownership. In the present study, the researchers found no significant difference in terms of marital status, gender, age, professional experience, education level and work hours with PSC in none of the hospitals. These results contradict those of Khater, Akhu-Zaheya, Al-Mahasneh, and Khater (2015) in Jordan, who reported that as the number of total years of experience goes high, the nurse's perception of the PSC increases. Our findings also contrast the results of the other studies by Abdou and Saber (2011) in Egypt and Jiang et al. (2019) in China. These studies indicated that according to the participants' marital status, there were differences in PSCs' perception.

However, nurses with permanent employment in public hospitals have higher perception of safety culture rather than those with contract employment, which was in line with the study of Kabir et al. (2013), where the significant relationship was found between safety culture perception and employment status. Based on our findings, it



can be held that this study of PSC may provoke policy and management initiatives so as to improve patient safety. Nevertheless, the study has yet taken the first step in PSC research in Iranian EDs. It appears that some more findings are required to determine more areas requiring attention.

## 5 | STRENGTHS AND LIMITATIONS

This study relies on cross-sectional data which is a limitation. Also, in this study, PSC is measured by a questionnaire, which is a type of self-limiting as PSC itself is a multifaceted concept indicated by the fact that a variety of different PSC questionnaires have been developed (Burstrom, Letterstål, Engström, Berglund, & Enlund, 2014). One of the ways to tackle this issue is to resort to a mixed method design, which was not used in this study. In addition, only the responses of nurses in EDs are included in this study. Therefore, the results of this study cannot be generally attributed to all the nurses working in other settings.

It is also recommended to use the Just Culture Model to establish an environment where nurses are given the right to utter their opinions so as to prevent patient harm without encountering penalty during risky situations. The findings of the present study will be beneficial in recognizing special domain areas requiring improvement. Furthermore, through this study some remedial plans, which are specific to groups, can be developed. The evidence can assist government health policymakers and hospital administrators to comprehend the risks pertaining to the issue of PSC in EDs. It also can help and develop strategies to enhance it. Meanwhile, the methods applied in this study may supply a reference for further future research and applications in other developing countries. The last but not least, there is a strong need to develop and enhance applicable policies to promote the culture of patient safety in hospitals.

## 6 | CONCLUSION

Overall, it was found that PSC perception was poor and all PSC dimensions need to be improved in both sectors. There is a necessity to budget for training staff and other pertinent infrastructure so as to increase overall capacity for improving safety culture. Indeed, such a measure can be taken incrementally. Other interventions also can be incorporated into the accreditation of hospitals which undertake to precisely evaluate their performance level in terms of the PSC as well as to implement some strategies to improve it incessantly.

### ACKNOWLEDGEMENT

We would like to express our profound gratitude to the Vice Chancellor of Tabriz University of Medical Sciences in person of Mr. Abdollah Safari for the support we received from him during the data collection. Many thanks also go to the nurses who volunteered to participate in the study.

### CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

### AUTHOR CONTRIBUTIONS

ZCH and AJ: Conceptualization and design of the study. ZCH, MA and MB: Acquisition, analysis or interpretation of data. ZCH: Manuscript preparation. SMSI: Manuscript editing. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.


### ETHICAL APPROVAL

The study was reviewed and approved by the Ethics Committee of Tabriz University of Medical Science (IR.TBZMED.REC.1397.272).

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**How to cite this article:** Chegini Z, Janati A, Afkhami M, Behjat M, Shariful Islam SM. A comparative study on patient safety culture among emergency nurses in the public and private hospitals of Tabriz, Iran. *Nursing Open*. 2020;7:768–775. <https://doi.org/10.1002/nop2.449>