# Evaluation of vulnerability-related risk factors in patients with spinal cord injuries During Covid-19 Pandemic


## Abstract

**Background:** Spinal cord injury is a chronic disease with increasing prevalence which causes various disorders in normal human life.

**Objectives:** This study endeavored to determine the risk factors related to the vulnerability in patients with spinal cord injuries During Covid-19 Pandemic in Ilam.

**Methods:** This study was conducted by utilization of a variety of descriptive cross-sectional studies in 2021. Questionnaires were used to collect information Tilburg vulnerability survey, Resilience survey and wax social support survey. For gaining samples with suitable disperse in the study properties and purposes, a list of patients was chosen and all of them were contacted to be informed about participating in the study. Completed surveys analyzed by SPSS16.

**Results:** Result showed, average score and standard deviation of vulnerability score in patients with SCI. Accordingly M(SD) measured to be 6.40(1.38) in physical dimension of vulnerability, 1.56(0.89) in mental dimension of vulnerability and 0.81(0.76) in social dimension of vulnerability. result of study, M(SD) was calculated to be 20.20(3.59) in family dimension, 18.76(3.83) in friends' dimension and 21.70(3.69) in other people dimension.

**Conclusions:** suggested to consider demographic variables affecting the health-related components in order to improve the condition of patients with SCI during the outbreak of Covid-19 disease.



**Keywords:** Covid-19, vulnerability, spinal cord injuries

## 1. Background

Spinal cord injury is a chronic disease with increasing prevalence which causes various disorders in normal human life (1). SCI is a life-changing condition with a low rampancy and high costs. Rehabilitation and improvement of individual performance is one of the aims of SCI health team (2). This disorder leads to serious physical-motor impairments and drops the life quality substantially. After injuries, individuals suffer from some of the major and minor changes such as tor-sion, shear stress and contusion compression (3, 4). Severe SCI induces a sudden immobility. This inactivity and resulted life style changes, cause cardiovascular disorders, worsen overall health condition and plummet the physical fitness of the patient (5). Since 2019 the outbreak of an unknown and novel phenomenon, known as Covid-19, has caused some difficulties for the patients. Negative effects of this disease on general health include clinical problems such as mortality, respiratory problems, different types of pain (chest pain, headache, myalgia and sore throat), anorexia, chills, fever, shortness of breathing, coughing and pulmonary complications (6, 7). Non-clinical problems could be mentioned as follows: stress, anxiety, depression, decreased social support, experience of abuse and the development of disability and vulnerability in the patient (8, 9).

Vulnerability as a clinical syndrome is along with some changes in various physiologic systems, dropped storage capacity and impaired ability to respond to the stresses (10, 11). Vulnerability is a momentous issue which is considered as an undesirable homeostatic condition in stressful situations in addition it results in cumulative failure of multiple physiological systems in human lifespan. Indeed, vulnerability cumulative failure leads to cellular and molecular defects in large volumes and induces diagnosable clinical imperfections ultimately. The possibility of inability (in physical, mental, social fields), delirium, disorders in daily activities, adverse consequences and falls will be increased during the vulnerability process (10-12). Proper measures with reference to vulnerability seem to be essential since negative results of its high persistence and prevalence are illustrated in personal and social life (13).

Psychological resilience is another important issue in chronic patients- patients with SCI in particular. It is a result of human adaptive responses and boosts his ability in order to achieve success and overcome disease threats despite of all the serious threats individuals have to face. Psychological resilience is an important concept in learning coping techniques in patients with chronic diseases and being successfully accustomed to life challenging situations (14, 15). Psychological resilience is known to be a health protector and a victorious performance or adaption with a threatful or irritating condition. Moreover, it is considered to be an active participation in surrounded environment which enable the ability of establishing bio-psychological balance against risky situations. Accordingly, clinical cares are so important and medical specialist must spare no pain for providing essential measures (16, 17). Patient social support is another problem which patients with SCI have to suffer particularly in the outbreak of Covid-19. Perceived social support is one's realization of kindness and backups of his or her family members, friends and relatives against stresses and accidents. Moreover, it plays a key

role in relieving the negative effects of disease on psychological dimension and improves life quality. Perceived social support can ameliorate the patient's adaptation to the disease, improve professional care provided to him or her and increase the patient's mental health (18, 19). Essentially it could act as an absolute supporter due to its mediating role among stressors and the occurrence of physical and psychological problems as do the strengthen of individuals cognition, reduction of stresses and increment of human survival (20, 21).

## 2. Objectives

Covid-19 evidently caused severe difficulties and obstacles for a better and healthier life. This respiratory phenomenon can induce more significant negative effects on patient's general health in patients with chronic diseases, especially people who suffer from spinal cord injuries and disorders. This study endeavored to determine the risk factors related to the vulnerability in patients with spinal cord injuries During Covid-19 Pandemic in Ilam.

## 3. Methods

### Study design

This study was conducted by utilization of a variety of descriptive cross-sectional studies in 2021. Samples selected by Convenience Sampling method from statistical population which consist of patients with SCI in Ilam province.

### Study population

In order to achieve the correct interpretation of the results of this study, sample size determined to be 140 patients with SCI that was equal to studies with parallel results. Inclusion criteria included age between 18 to 65, definite SCI catching according to the doctor's diagnosis, a history of at least one year after SCI. Incomplete questionnaires were excluded from the study. For gaining samples with suitable disperse in the study properties and purposes, a list of patients was chosen and all of them were contacted to be informed about participating in the study. Individuals with compatible parameters were acquainted with reference to the study and its aims. Questioning progression began eventually.

### Data gathering

Surveys were filled up with self-declaration methods in samples who were literate enough to read and write and understanded the concept of survey, on the other hand illiterate patients were interviewed in order to fulfill the questionnaire completion. To prevent Covid-19, all the steps of questionary process went according to the health protocols. Furthermore, when it came to prevention of patient's fatigue, this process was held in more steps if needed.

### Ethical Approval

Researchers obtained legal licenses from the University Research Ethics Council with the code (IR.MEDILAM.REC.1400.083) prior to inviting patients to participate in the study. What is more, participants were free for relinquishment and they were ensured about the secrecy of data by completing surveys anonymously.

## Study Tools

**Tilburg vulnerability survey:** Tilburg vulnerability survey was utilized for evaluation of patient's vulnerability condition. This survey consists of A and B part. Part contains ten questions with reference to the age, sex, level of education, incomes, marital status, horrible events of the past year, comorbidities, environmental satisfaction and lifestyle. Part B assessed the main indicators of vulnerability which includes 15 questions about physical, mental and social fields. 11 questions of part B are evaluated with yes and no options, and 4 other questions with yes, no and sometimes options. Physical dimension of this questionnaire includes 8 questions about physical health, unwanted weight loss, difficulty maintaining balance, hearing loss, vision loss, loss or lack of strength in the hands and tiredness and fatigue. Mental dimension consists of 4 questions about cognition, depression, neurological symptoms and coping with problems. Social dimension includes 3 questions about living alone, socializing and social supports. The range of scores was from 0 to 15 and the survey had a cut-off point of 5 which illustrates that score of 5 or more is an indicator for vulnerability. Cronbach's alpha coefficient of the Persian version of this questionnaire has been reported as 0.807 and its validity has confirmed the existence of three dimensions by the construct validity method (convergent and divergent) (22).

**Resilience survey:** Canner and Davidson resilience survey was used for evaluation of patient's resilience. This survey was designed in 2003 with 25 questions. In the Likert scale there was five options which could be mentioned as follows: completely false (zero score), infrequent (score 1), sometimes true (score 2), often true (score 3) and always true (Score 4). the range of scores is from 0-100. In this survey higher score declares upper levels of resilience in participants (23). The internal consistency reliability coefficient via Cronbach's alpha of this scale is reported in the range of 0.72 to 0.82. This scale has also been standardized for use in Iran (29).

**Wax social support survey:** Wax survey was utilized for assessment of social support. This questionnaire has 23 items in three dimension of family (8 scales), friends (7 items) and others (8 items) with a score of zero and one (10, 24). In a study conducted in Iran, the reliability of this tool was reported between 0.7 to 0.9(30).

## Statistical Analysis

Completed surveys analyzed by SPSS16. Quantitative and qualitative data were demonstrated as M(SD) and frequency (percentage) respectively. In addition, independent T-test, paired T-test, ANOVA analysis and linear regression were used to assess the relationship between demographic variables and vulnerability, social support and resilience surveys.

## 4. Results

According to the findings, 94 (64.8%) male patients and 51 (35.2%) female patients, 109 (75.2%) had no history of smoking and 36 (24.8%) had a history of smoking. Also, in terms of access to medical care and rehabilitation, the rate of 94 (64.8%) patients was moderate and the rate of 42 (29%) patients in terms of time of spinal cord injury was Between 5 and 10 years. Regarding to the results of study, M(SD) score of vulnerability was 8.78 (1.80), resilience score was 33.66 (12.87) and social support score gained to be 60.67 (9.30). Moreover, in view of the classification of resilience status in patients, 125 (86.2%) participants gained a low resilience score and 20 (13.8%) participants had a medium score. Results of table 1 showed the M(SD) score of vulnerability, resilience, social support in participants. As for the findings, vulnerability was higher in men with a SCI history of more than 10 years, a history of smoking and economic dissatisfaction (P<0.05). In view of resilience status, M(SD) was recorded to be higher in patients with less than 2 years of disease history, no smoking and high economic satisfaction (P<0.05). Furthermore, social support rate was reported to be higher in patients with more access to medical and rehabilitation services, less than 2 years of disease history and no smoking (P<0.05). (Table 1).

**Table 1- Mean and standard deviation of vulnerability, resilience and social support scores in the studied patients**

| Variable | | N (%) | Vulnerability | Resilience | social support |
|---|---|---|---|---|---|
| **Sex** | Male | 94(64.8) | 8.84(1.68) | 33.15(12.48) | 59.92(9.46) |
| | Female | 51(35.2) | 8.68(2.02) | 34.58(13.63) | 62.05(8.94) |
| **P-value F** | | - | **P=0.029 F=4.84** | **p=0.32 F= 0.99** | **p=0.69 F= 0.15** |
| **Access to medical care and rehabilitation** | Low | 36(24.8) | 9.19(1.48) | 30.52(11.24) | 57.19(8.78) |
| | medium | 94(64.8) | 8.72(1.81) | 34.18(12.51) | 61.17(8.75) |
| | Good | 15(10.3) | 8.20(2.33) | 37.93(17.36) | 65.93(11.26) |
| **P-value F** | | | **P=0.17 F= 1.78** | **P=0.14 F= 1.99** | **P=0.006 F=5.34** |
| **Time of spinal cord injury** | Less than 2 years | 32(22.1) | 7.31(1.67) | 42.78(11.05) | 66.31(9.66) |
| | Between 2-5 years | 37(25.5) | 8.97(1.21) | 32.08(10.55) | 59.16(8.68) |
| | Between 5 and 10 years | 42(29) | 9.11(1.51) | 30.83(13.32) | 59.92(8.93) |
| | More than 10 years | 34(23.4) | 9.55(2.06) | 30.29(12.68) | 57.94(8.18) |

| | | | | | |
|---|---|---|---|---|---|
| **P-value<br>F** | | **-** | **P=0.000<br>F= 12.01** | **P=0.000<br>F= 8.00** | **P=0.001<br>F= 5.84** |
| **Smoking status** | Yes | 36(24.8) | 9.91(1.40) | 25.08(9.62) | 53.94(5.86) |
| | No | 109(75.2) | 8.41(1.77) | 36.49(12.58) | 62.89(9.18) |
| **P-value<br>F** | | **-** | **P=0.000<br>F= 21.38** | **P=0.000<br>F=24.77** | **P=0.000<br>F=30.10** |
| **Marital status** | Married | 110(75.9) | 8.80(1.77) | 33.43(13.19) | 60.99(9.45) |
| | Single | 35(24.1) | 8.71(1.93) | 34.37(11.96) | 59.68(8.94) |
| **P-value<br>F** | | **-** | **P=0.92<br>F= 0.01** | **P=0.14<br>F= 2.13** | **P=0.47<br>F=0.51** |
| **Economic satisfaction** | Yes | 15(10.3) | 6.33(0.89) | 52.60(4.59) | 75.40(7.40) |
| | No | 130(89.7) | 9.06(1.66) | 31.47(11.67) | 58.97(7.91) |
| **P-value<br>F** | | **-** | **P=0.03<br>F= 4.35** | **P=0.001<br>F=12.66** | **P=0.35<br>F= 0.85** |

Table 2 reveals the results of percentage, average score and standard deviation of vulnerability score in patients with SCI. Accordingly M(SD) measured to be 6.40(1.38) in physical dimension of vulnerability, 1.56(0.89) in mental dimension of vulnerability and 0.81(0.76) in social dimension of vulnerability (Table 2).

**Table 2- Percentage, mean and standard deviation of vulnerability score in the studied patients**

| Variable | Dimensions of the questionnaire | Number of questions | Mean | SD | Min | Max |
|---|---|---|---|---|---|---|
| **vulnerability** | Physical | 8 | 6.40 | 1.38 | 2 | 8 |
| | Psychological | 4 | 1.56 | 0.89 | 0 | 4 |
| | social | 3 | 0.81 | 0.76 | 0 | 3 |
| **M(SD)** | | 15 | 8.78 | 1.80 | 5 | 13 |

Table 3 provides information about the results of percentage, average score and standard deviation of social support score in patients with SCI. as regards the result of study, M(SD) was calculated to be 20.20(3.59) in family dimension, 18.76(3.83) in friends dimension and 21.70(3.69) in other people dimension (Table 3).

**Table 3: Percentage, mean and standard deviation of social support score in the studied patients**

| Variable | Dimensions | Number | Mean | SD | Min | Max |
|---|---|---|---|---|---|---|

| | of the questionnaire | of questions | | | | |
|---|---|---|---|---|---|---|
| **social support** | Family | 8 | 20.20 | 3.59 | 13 | 30 |
| | Friends | 7 | 18.76 | 3.83 | 9 | 27 |
| | other people | 8 | 21.70 | 3.69 | 14 | 31 |
| **M(SD)** | | 25 | 60.67 | 9.30 | 41 | 87 |

Table 4 shows the association of vulnerability with resilience and social support status. As for this chart, vulnerability rate will be decrease by soaring the resilience and social support rate (Table 4).

**Table 4: Evaluation of the correlation between vulnerability and resilience status and social support in patients with SCI**

| Variable | Statistical values | Vulnerability status |
|---|---|---|
| **Resilience** | P | 0.000 |
| | R | 0.94 |
| | R Square | 0.885 |
| | F | 1101.757 |
| | t | - 33.193 |
| **Social support** | P | 0.000 |
| | R | 0.842 |
| | R Square | 0.710 |
| | F | 349.741 |
| | t | - 18.701 |

## 5. Discussion

This study aspired to determine the vulnerability status and its relationship with associated variables in patients with SCI during the outbreak Covid-19. The status of social support, resilience and vulnerability of patients with spinal cord injuries during the Quid-19 pandemic was not in good condition and with increasing the level of social support and resilience, the vulnerability of patients decreased. Regarding to the findings, M(SD) score of vulnerability was 8.78(1.80) and all the studied patients had a score higher than 5 in vulnerability. Asadi had a study in elderly group which illustrated that 40.4% of the elderly who referred to the emergency department and 78.9% of the elderly with chronic hypertension were vulnerable. On the whole, overall prevalence of vulnerability in elderlies estimated to be 40.4% and in elderlies who were exposed to vulnerability was 35% and in non-vulnerable elderlies measured

to be 24.6% (25). Jafarian Yazdi et al stated that M(SD) score of vulnerability was 5.41(2.86) in addition 62.5% of elderlies were vulnerable (26).

In present study, vulnerability in men was higher rather than women which was parallel to the results of the study of Jafarian Yazdi et al (26). Although it was in contrast with the result of Asadi's study that noticed more vulnerability in old women rather than the old men (25). Vulnerability rate was higher in patients with the disease history of more than 10 years, history of smoking and also higher economic dissatisfaction. Vaish et al declared that the disability rate was higher in the elderly with a history of chronic diseases (27). As for the results, increase of vulnerability decreases the rate of resilience and social support in patients with SCI. Rege et al demonstrated that the increase of vulnerability soars the mortality in patients with traumatic orthopaedic (28).

One of the limitations of this study is the access to patients, which due to the prevalence of Covid -19, many patients were afraid to cooperate in the study due to fear of non-compliance with health protocols. For this reason, the necessary reassurance was given to the patients that the health protocols will be observed. The questionnaire was also completed in absentia if patients wished.

## 5.1 Conclusions

Since the onset of Covid-19 the vulnerability of patients reported to be high notwithstanding their social support and resilience noticed to be low. Thus, it is recommended to provide therapeutic and psychological interventions in order to reduce vulnerability and increase social support and resilience. Moreover, it is suggested to consider demographic variables affecting the health-related components in order to improve the condition of patients with SCI during the outbreak of Covid-19 disease.

## Footnotes

**Ethical Approval:** The Ethics Committee of the Ilam University of Medical Sciences approved (IR.MEDILAM.REC.1400.083).

## References

1. Emami Razavi SZ, Hosseini M, Azadvari M. More Attention to Spinal Cord Injury Patients During COVID-19 Pandemic. Archives of Neuroscience: 7 (4); e105932. 2020;7(4):e105932, DOI : 10.5812/ans.

2. Musselman KE, Walden K, Noonan VK, Jervis-Rademeyer H, Thorogood N, Bouyer L, et al. Development of priorities for a Canadian strategy to advance activity-based therapies after spinal cord injury. Spinal Cord. 2021;59(8):874-84, https://doi.org/10.1038/s41393-021-00644-2S.

3. Reier PJJN. Cellular transplantation strategies for spinal cord injury and translational neurobiology. NeuroRX. 2004;1(4):424-51, https://doi.org/10.1602/neurorx.1.4.424.

4. Al Mamun A, Wu Y, Monalisa I, Jia C, Zhou K, Munir F, et al. Role of pyroptosis in spinal cord injury and its therapeutic implications. Journal of Advanced Research. 2021;28:97-109.

5. Harman KA, DeVeau KM, Squair JW, West CR, Krassioukov AV, Magnuson DSJPR. Effects of early exercise training on the severity of autonomic dysreflexia following incomplete spinal cord injury in rodents. Physiological Reports 2021;9(15):e14969, https://doi.org/10.814/phy2.

6. Gholami A, Hemati R, Khorshidi A, Borji M, Kafashian M, Kalvandi G, et al. The Prevalence of Clinical Symptoms in Children and Adolescents with Covid-19: A Systematic Review and Meta-Analysis Study. International Journal of Pediatrics. 2020;8(10):12177-88, 10.22038/IJP.2020.48934.3925.

7. He X, Cheng X, Feng X, Wan H, Chen S, Xiong MJFiPH. Clinical symptom differences between mild and severe COVID-19 patients in China: a meta-analysis. Public Health journal. 2021;8:954, https://doi.org/10.3389/fpubh.2020.561264.

8. Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, et al. Depression, Anxiety and Stress Among Indians in Times of Covid-19 Lockdown. Community Mental Health Journal. 2021;57(1):42-8, https://doi.org/10.1007/s10597-020-00664-x.

9. Williamson EJ, McDonald HI, Bhaskaran K, Walker AJ, Bacon S, Davy S, et al. Risks of covid-19 hospital admission and death for people with learning disability: population based cohort study using the OpenSAFELY platform. bmj. 2021;374:doi: https://doi.org/10.1136/bmj.n592

10. Saeidimehr S, Delbari A, Zanjari N, Fadaye Vatan R. Factors Related to Frailty Among Older Adults in Khuzestan, Iran %J Salmand: Iranian Journal of Ageing. 2021;16(2):202-17, doi: 10.32598/sija.16.2.1600.1.

11. Elsamadicy AA, Sandhu MRS, Freedman IG, Reeves BC, Koo AB, Hengartner A, et al. Impact of Frailty on Morbidity and Mortality in Adult Patients Presenting with an Acute Traumatic Cervical Spinal Cord Injury. World Neurosurgery. 2021;153:e408-e18.

12. Mousavisisi M, Shamshirgaran SM, Rezaeipandari H, Matlabi H. Multidimensional Approach to Frailty among Rural Older People: Applying the Tilburg Frailty Indicator %J Elderly Health Journal. Elderly Health Journal. 2019;5(2):92-101, doi: 10.18502/ehj.v5i2.2155.

13. Jiao J, Wang Y, Zhu C, Li F, Zhu M, Wen X, et al. Prevalence and associated factors for frailty among elder patients in China: a multicentre cross-sectional study. BMC Geriatrics. 2020;20(1):100, doi.org/10.1186/s12877-020-1496-1.

14. Beasley M, Thompson T, Davidson JJP, differences I. Resilience in response to life stress: the effects of coping style and cognitive hardiness. Personality and Individual Differences. 2003;34(1):77-95, https://doi.org/10.1016/S0191-8869(02)00027-2.

15. fayand j, akbari m, moradi o, karimi k. Investigating the effectiveness of resiliency pattern on improving the quality of life of multiple sclerosis patients: a follow up study, J Iranian Journal of Rehabilitation Research in Nursing. Iranian Journal of Rehabilitation Research in Nursing. 2019;5(3):31-8, DOI: 10.21859/ijrn-05035.

16. He F, Cao R, Feng Z, Guan H, Peng JJPo. The impacts of dispositional optimism and psychological resilience on the subjective well-being of burn patients: A structural equation modelling analysis. PLOS ONE Journal. 2013;8(12):e82939, https://doi.org/10.1371/journal.pone.0082939.

17. Saunders R, Singer R, Dugmore H, Seaman K, Lake FJRP. Nursing students' reflections on an interprofessional placement in ambulatory care. Reflective Practice journal 2016;17(4):393-402, https://doi.org/10.1080/14623943.2016.1164686.

18. Szkody E, Stearns M, Stanhope L, McKinney CJFp. Stress-buffering role of social support during COVID-19. Family Process. 2021;60(3):1002-15, https://doi.org/10.111/famp.12618.

19. Mahamid FA, Veronese G, Bdier D. Fear of coronavirus (COVID-19) and mental health outcomes in Palestine: The mediating role of social support. Current Psychology. 2021: https://doi.org/10.1007/s12144-021-02395-y

20. Bayrami M, Varaee P, Mamdouhi Z. Investigating the Relationship between Gratitude and Perceived Social Support and Happiness of Elderly Women in Districts 3, 4, and 5 of Tehran in 2020 during the Epidemic of Covid-19 Disease: A Descriptive Study %J Journal of Rafsanjan University of Medical Sciences. JRUMS journal. 2021;20(5):554-70, doi : 10.52547/jrums.20.5.554.

21. Zuo B, Yang K, Yao Y, Han S, Nie S, Wen FJP, et al. The relationship of perceived social support to feelings of hopelessness under COVID-19 pandemic: The effects of epidemic risk and meaning in life. Personality and individual differences. 2021; 183:111110, https://doi.org/10.1016/j.paid.2021.

22. ABDI M, DABIRAN S, HEDAYATI M, FARMANI M, ABDOLMALEKI EY, RAHIDI NJJoRotL. Prevalence of frailty and Prefrailty among Iraniancommunity-dwelling Older Adults. Journal of Research on the Lepidoptera. 2020;51(1):100-9, DOI: 10.36872/LEPI/V51I1/301009.

23. Connor KM, Davidson JRJD, anxiety. Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). 2003;18(2):76-82, https://doi.org/10.1002/da.10113.

24. Ebrahimi B, Hosseini M, Rashedi VJEHJ. The Relationship between social support and death anxiety among the elderly. 2018: DOI: https://doi.org/10.18502/ehj.v4i2.261.

25. asadi h, habibi soola a, iranpour s. Prevalence of Frailty and Related Factors in the Elderly Referred to the Emergency Department of Ardabil Medical Education Centers in 2020 %J Journal of Gerontology. 2021;6(2):64-76.

26. Jafarian Yazdi A, Pashaii sabet F, Moosavi arfa N, Hasani MM. Prevalence of frailty and factors associated with frailty in the hospitalized elderly %J Iranian Journal of Nursing Research. 2021;16(1):1-9.

27. Vaish K, Patra S, Chhabra PJJofm, care p. Functional disability among elderly: A community-based cross-sectional study. Journal of family medicine and primary care. 2020;9(1):253, doi: 10.4103/jfmpc.jfmpc_728_19.

28. Rege RM, Runner RP, Staley CA, Vu CCL, Arora SS, Schenker MLJI. Frailty predicts mortality and complications in chronologically young patients with traumatic orthopaedic injuries. Injury. 2018;49(12):2234-8, https://doi.org/10.1016/j.injury.2018.08.017.

29. Ahangarzadeh Rezaei S. PSYCHOMETRIC PROPERTIES OF THE PERSIAN VERSION OF . Nurs Midwifery J. 2015; 13 (9) :739-747 https://doi.org/10.1013/j.injury.2015.02.017

30. Ebrahimi GS. [Investigate the validity three concepts of control source, self-esteem and social support (Persian)] Tehran: Islamic Azad University of Tehran; 1993. doi: 10.4103/jfmpc.121.178.