

Compassion Fatigue among Nursing Staff Practicing at Neurological Wards

By

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Abstract

Objective: To assess the level of compassion fatigue among nursing staff working in the neurological wards. **Background:** Compassion fatigue is expressed as the price of compassionate care paid by health care professionals, especially nurses, who work alongside patients with critical physical dysfunctions such as neurological dysfunction in a stressful environment such as neurological wards. **Methods:** A cross-sectional study was conducted in the present study. A purposive sample of 131 neuroscience nurses who worked in the neurological wards and had met the study's inclusion criteria were targeted. The data collection started from January 21st, 2022, to March 1st, 2022. Face-to-face interviews were used for data collection. A compassion fatigue scale was used to measure the level of compassion fatigue among the study participants. **Results:** 63.4 % of nursing staff working in neurological wards experienced severe compassion fatigue. While (25.2%) of them were suffering from moderate compassion fatigue, and (11.5%) were suffering from mild compassion fatigue. **Conclusion:** The study contributed to the identification of a common but undiagnosed phenomenon in nursing: compassion fatigue, as evidenced by high levels of severe compassion fatigue among nurses working in neurological wards. **Recommendation:** Improving nursing leaders' roles in diagnosing and addressing compassion fatigue among nurses by educating them regarding compassion fatigue phenomena and the effective strategies to deal with it. Heart Math intervention is an example of effective approach that is recommended to nurses who are at risk or suffering from compassion fatigue, which is a physiological and psychological technique to build resiliency in oneself.

Keywords: Compassion fatigue, Neurological ward

Summary statement

What is already known about this topic?

- Compassion fatigue is a physical, psychological, and spiritual exhaustion that affects loving and caring nurses after many experiences of being exposed to their patients' suffering.
- Compassion fatigue affects all health care professionals, but to a different degree.

What this paper adds?

- The current study uncovered a serious work-related health issue that neuroscience nurses face on a daily basis.
- To broaden one's understanding of neuroscience nursing work-related challenges.

Introduction

Nurses go into nursing with the goal of helping others and delivering compassionate care to patients who have actual or potential physical, mental, emotional, and spiritual needs; however, nurses might neglect taking care of themselves, which may negatively impact their care quality. Compassion fatigue can strike compassionate and loving nurses as an outcome of the constant stress of satisfying the often-overwhelming needs of patients and their relatives (Lombardo & Eyre, 2011). Compassion fatigue is a term used to describe the physical, mental, and spiritual exhaustion of a healthcare provider, causing a decreased ability to offer appropriate care (Caporusso, 2018). Compassion fatigue is defined as a decreased capacity and interest in sympathetic attunement with individuals being cared for. It is a significant factor that leads to the increasing nursing attrition rate. Nurses experience compassion fatigue as a result of their frequent and close interaction with traumatic patients, which manifest in many forms of mental and physical discomfort symptoms (Alharbi et al., 2019). Since 2003, Iraq has experienced a number of significant changes that have impacted citizens, soldiers, and healthcare providers on a psychological level as well as their personal and financial safety, including dictatorship, economic sanctions, foreign occupation, and acts of terrorism and the resulting death and destruction, with hospitals teeming with injured and martyrs, all of which have left a lasting impact on healthcare providers' psychological and mental health. For a long time, Iraqi healthcare providers have been subjected to practically daily crises and traumas, leaving them with emotional consequences and distorted memories of the violence and bloody events (Al-Hawdrawi et al., 2017; Tej, Hegde, & Shetty, 2021).

Compassion fatigue can cause nurses' minds, bodies, and spirits to deteriorate as a result of the loss of empathy. Nurses may leave their job as the only option to find catharsis if they are unable to rehabilitate. The impact of compassion fatigue can be seen throughout the entire healthcare system sections, particularly nursing services (Peters, 2018). Nurses who experience both compassion fatigue could pay a physical, psychological, and economic price due to their constant exposure to patients experiencing trauma or distress. This can negatively impact nurses' mental and physical health, safety, and wellbeing, as well as that of their families, nursing care to patients, ability to make decisions, and working environment by lowering productivity and increasing turnover (Cocker & Joss, 2016; Thriveni et al., 2020). Neurological wards host a wide array of patients, such as those who suffer from traumatic brain injury, increasing intracranial pressure, or stroke., They need special and advanced neuroscience and neuro-surgical nursing care (Stewart-Amidei et al, 2010; You, Yoon, & Moon, 2021). The constant exposure of the nurse to the patients' anguish and trauma, which sometimes combined with job pressures, puts empathetic attunement in danger of developing compassion fatigue (Alharbi et al., 2019). Compassion fatigue causes physical and emotional symptoms for nurses, leading them to become disengaged from patients care and focused on the technical rather than the compassionate aspects of their patient care (Salmond et al, 2017). Such a research endeavor is particularly required in a challenging discipline such as neuroscience nursing. Everyday Neuroscience nurses are in constant conflict, caring for many un curable neurological diseases; including but not limited to for Parkinson's disease, Stroke, and brain tumors. Nurses are sacrificing their self-care due to their failure to sustain clear personal or professional boundaries with their clients. Therefore, they may develop compassion fatigue. Frequent exposure to stressful occupational situations early in a nursing career can precipitate early development of compassion fatigue, as can a personal history of trauma of the nurse to be a great issue to develop compassion fatigue (Peters, 2018; Perry ,2006). Such a research endeavor is particularly required in a challenging discipline such as neuroscience nursing. Previous studies have neglected the investigation of nursing compassion fatigue in an important area such as the

neurological ward, and have not assessed the level of compassion fatigue among nursing staff working in the neurological ward

Research Methods & Procedures

Ethical Consideration

The researchers pledge to keep the identifying details of the participants private and use the collected data without causing any actual or potential harm to the study subjects. The study tool was designed to preserve the subject's right to anonymity. Subjects were given the right to freely participate in the study. After taking the official approval from the administration of the neurological hospital, a verbal consent was taken from the neuroscience nurses to participate in the study after informing them that their participation is voluntary, and the information will be treated confidentially and used for scientific research purposes only.

Design and Sampling

This study was conducted using a cross sectional study. The study conducted among (131) neuroscience nurse who used to work in the neurological wards. The data collection started from January 21st, 2022, to March 1st, 2022. Face-to-face interviews were used for data collection.

Setting of study

The study targeted neuroscience nurses who used to work in the neurological wards in Baghdad Teaching Hospital, Ghazi al-Hariri for Surgical Specialties Hospital, and the Private Nursing Home Hospital. Neurosurgery Teaching Hospital and Dr. Saad Al-Witry Neuroscience Hospital. Additionally, Imamain Kadhimain Teaching Hospital, and Yarmouk Teaching Hospital.

Instrument of study

The study instrument consists of two parts. The first part consists of socio-demographic and professional characteristics. The second part consists of the compassion fatigue scale, which contains 14 items in which the scores (52–70) showed a severe level of compassion fatigue, while (33–51) were scored as moderate levels of compassion fatigue, and (14–32) were scored as mild levels of compassion fatigue. That explains conditions in which nursing compassion fatigue occurs. The SCVI was 0.7, and minor changes were made to a few items with respect to the expert's suggestions. The scale had an acceptable level of internal consistency, as determined by a Cronbach's alpha of 0.73 (Al-Razaq et al., 2018).

Inclusion Criteria

Nurses practicing in neurological wards, both the morning and night shifts were included. Nurses who worked in the public sector of the neurological wards with experience of at least six months. Nurses who worked in the private sector of the neurological wards with experience of at least one month.

Exclusion Criteria

Nurses with less than six months of experience in the public sector or less than one month of experience in the private sector of the neurological ward. Nurses who provide care for patients who are less than 18 years old.

Results

Table 1. *Distribution of Nurses According to their Socio-Demographic Characteristics.*

Nurses Age	Frequency	Percent
19 - 25 Years old	53	40.5
26 - 32 Years old	30	22.9
33 - 39 Years old	16	12.2
40 - 46 Years old	18	13.7
47 - 53 Years old	8	6.1
≥ 54 years old	6	4.6
Total	131	100.0
Gender	Frequency	Percent
Male	41	31.3
Female	90	68.7
Total	131	100.0
Educational level	Frequency	Percent
High School of Nursing	83	63.4
Diploma	43	32.8
Bachelor	5	3.8
Total	131	100.0
Marital Status	Frequency	Percent
Single	49	37.4
Married	80	61.1
Divorce	2	1.5
Total	131	100.0

The findings in Table (1) showed that more than one third (40.5) of the study sample were within the age range of (19–25) years. More than half (68.7%) of the study sample were females. Furthermore, most of them (63.4%) received their education from high school nursing. More than half (61.1%) of the study sample were married.

Table (2). *Distribution of Nurses patients according to their Professional Characteristics*

Hospital Name	Frequency	Percent
Neurosurgery Hospital	31	23.7
Neurosciences Hospital	26	19.8
Nursing Home Hospital	14	10.7
Ghazi al-Hariri Surgical Specialties Hospital	18	13.7
Baghdad Teaching Hospital	7	5.3
Alyarmook Hospital	18	13.7
Imamain Kadhimain Hospital	17	13.0
Total	131	100.0
Type of working ward	Frequency	Percent
Private ward	35	26.7
General ward	96	73.3
Total	131	100.0
Working place	Frequency	Percent
Female patients ward	51	38.9
Male patients ward	49	37.4
Mixed ward	31	23.7
Total	131	100.0
Experience	Frequency	Percent
6 -11 Months in general ward	32	24.4
1 Year & More in general ward	68	51.9
1-4 Months in Private ward	11	8.4
≥ 5 Months in Private ward	20	15.3
Total	131	100.0
Working Shift	Frequency	Percent
Morning Shift	65	49.6
Evening Shift	66	50.4
Total	131	100.0
Beds Number in The Working Ward	Frequency	Percent
≤ 10 beds	12	9.2
11 - 20 Beds	18	13.7
21 - 30 Beds	26	19.8
31 - 40 Beds	52	39.7
41 - 50 Beds	15	11.5
≥ 51 Bed	8	6.1
Total	131	100.0
Nurses Number During the Working Shift	Frequency	Percent
1 - 5 Nurses	81	61.8
6 - 10 Nurses	39	29.8
11 - 15 Nurses	11	8.4

Total	131	100.0
Assigned patients number for each nurse	Frequency	Percent
≤ 5 Patients	39	29.8
6 - 10 Patients	55	42.0
11 - 15 Patients	23	17.6
16 - 20 Patients	8	6.1
21 - 25 Patients	6	4.6
Total	131	100.0
Challenges Affecting Nursing Care Quality	Frequency	Percent
Personal Challenges	2	1.5
Administrative Challenges	6	4.6
Problems with Colleagues	2	1.5
Problems with Physicians	8	6.1
Problems with Patient's Relatives	79	60.3
No Problems at all	34	26.0
Total	131	100.0
Nursing Leaders' Response Their Nursing Staff's Opinions	Frequency	Percent
Always Respond	65	49.6
Somewhat Respond	41	31.3
Do not Respond	25	19.1
Total	131	100.0

The numbers in table (2) represent the highest percentages of the selected variables. In which the majority of the collected sample (23.7%) worked in a neurosurgery hospital. About (73.3%) of the study participants were working in the general sector, and about (38.9%) of them were working in female patient's neurological wards. Furthermore, more than half (51.9%) of them had experience of one year or more in the general sector, and (15.3%) of them had experience of five months or more in the private ward. About half (50.4%) of the study sample were working during the evening shift. Many nurses (39.7%) were employed in the wards where the number of beds ranged from (31 -40). The number of nurses who were working during the shift ranged from (1-5) nurses, composing the majority (61.8%) of the study participants. Nurses who cared for (6-10) patients made up (42%) of the study sample. The highest percentage (60.3%) of challenges that the study participants faced every shift were problems with the patient's relatives. Many of the study nurses' leaders (49.6%) were responding to their nursing staff's opinions regarding increasing the quality of care.

Table (3). *Descriptive Distribution of Nurses according to Their Categorized Compassion Fatigue Levels*

Levels of Compassion Fatigue	Frequency	Percent
Mild	15	11.5
Moderate	33	25.2
Sever	83	63.3
Total	131	100.0

As presented in Table (3) the percentages of compassion fatigue level among neuroscience nurses working in neurological wards indicates that (63.4%) of nursing staff were suffering from a severe level of compassion fatigue. While (25.2%) of the study subjects experienced moderate levels of compassion fatigue, (11.5%) experienced mild levels of compassion fatigue, which is considered the lowest percentage.

Discussion

Compassion fatigue is the outcome of accumulated and neglected feelings that gradually lead the nurse to incurable health problems. The current study aims to assess compassion fatigue levels among nursing staff working in the neurological wards. With regard to the demographic and professional variables of nursing staff in the study sample, Table (1) indicates that more than one third (40.5%) of the study sample were within the age range of (19-25) years. These results agree with a study conducted in 2021 in Kars, Turkey. The results

showed that 49.6% were aged 20–29 years (Öztürk & Karabulutlu, 2021). This result is confirmed by a study conducted by Sacco et al., (2015) they found in their study that (42.1%) of the participating nursing staff were (20–29) years old.

As shown in table (1) most of the study sample (63.4%) received their education from high school of nursing. These results disagree with a study done by Aslan et al. (2022) they found that (72.9%) of whom had a bachelor's degree. These results are surprising to the researcher due to the fact that nurses with a Bachelor of Science in nursing (BSN) has more competence to care for neurologically damaged patients. This is confirmed by The American Association of Colleges of Nursing (AACN) which stated that a growing body of evidence shows that BSN graduates bring unique skills to their work as nursing clinicians and play an important role in providing safe patient care (American Association of Colleges of Nursing [AACN], 2021).

Table (1) shows that about (61.1%) of nursing staff were married. These results were confirmed by a study conducted by Hinderer et al. (2014), they found that the majority (53.9%) were married or partnered. In this respect, Lourenção et al. (2022), they found that (67.1%) of the sample were married. These results were not surprising to the researcher due to the fact that married nurses have a tendency to suffer from compassion fatigue due to the life and family demands and pressures.

As shown in table (2), about (23.7%) of the collected sample worked in a neurosurgery hospital. This result reflects the fact that the neurosurgery hospital is a specialized hospital located in the center of Baghdad city where most of the urgent cases result from critical or life-threatening circumstances such as road accidents or falling from heights or any neurological cases in which its nursing staff is exposed to the severe suffering of their patients. This fact was clearly reflected by Peters (2018), who reported that nurses were predisposed to compassion fatigue due to repeated exposure to the suffering of others, high-stress environments, and continuous self-giving.

As shown in table (2), more than half (51.9%) of the nursing staff were with experience one year or more. This result was supported with a study, which was conducted in 2018 on 70 Irish emergency care nurses. The study findings revealed that (60%) of them had experience of (0–5) years (Burgess, 2018).

As shown in table (2), about half (50.4%) of the study sample were working during the evening shift. These results were supported with a correlational study, conducted in 2022, in which the majority (41.8%) of nurses were working during the night shift (Lourenção et al., 2022).

Table (2) showed that many nurses (39.7%) were employed in the neurological wards where the number of beds ranged from (31 -40). And the number of nurses who were working during the shift ranged from (1–5) nurses, composing the majority (61.8%) of the study participants. Nurses who cared for (6–10) patients made up (42%) of the study sample. Surprisingly, these findings contradict the study done by Mchugh et al (2011). They clarified that the staffing ratios for various specialties are specified by the California Department of Health Services regulations. For example, in general medical and surgical units, minimum staffing was set at one licensed nurse for every six patients for an eighteen-month phase-in period before being reduced to one nurse for every five patients.

As shown in table (2), many of the study nurses' leaders (49.6%) were responding to

their nursing staff's opinions regarding increasing the quality of care. This reflects the fact of the leaders' role in the nursing care process and the leadership management of the nursing staff in the neurological wards, as supported by Mudallal et al., (2017). which emphasizes the importance of nurse leaders in improving work conditions, empowering and motivating nurses, and decreasing nurses' feelings of burnout, lowering turnover rates, and improving nursing care quality.

As shown in table (2), nearly three quarters (73.3%) of nursing staff were working in the general wards. About (38.9%) of them were working in female patient's neurological wards. The highest percentage (60.3%) of challenges that the study participants faced every shift were problems with the patient's relatives. The current results were measured for the first time to cover the study's variables and effectively address the knowledge gap.

As presented in table (3) the percentages of compassion fatigue level among neuroscience nurses working in neurological wards indicates that (63.4%) of nursing staff were suffering from a severe level of compassion fatigue. These results agree with a descriptive cross-sectional design study that done by Ruiz-Fernández et al. (2020), the study indicated that the majority of the sample (60.5%) had high levels of compassion fatigue. The results were not surprising to the researcher due to the severity of neurological diseases, disorders, and injuries that neurologically damaged patients suffer from and how they affect them physically, psychologically, and behaviorally. Nurses who care for those patients are at high risk of being affected by them and may develop compassion fatigue more than other nurses practicing in other health care settings. This was reflected in a study conducted by Gustafsson and Hemberg (2022). Which revealed that nurses who are constantly exposed to their patients' suffering may experience compassion fatigue. Compassion fatigue impairs the nurse's ability to be compassionate, and caring is no longer felt in the same way.

While (25.2%) of the study sample suffered from moderate levels of compassion fatigue and mild levels of compassion fatigue are considered the lowest percentage, representing (11.5%). These results agree with a study done by Al-Razaq et al (2018) the study findings indicate that most of the healthcare professionals (65.4%) had moderate level of compassion fatigue and (26.9%) had mild level.

The current findings did not surprise the researcher because neuroscience nurses in Iraq and around the world build human relationships with their patients as soon as they talk to them because nurses and patients live in the same country where they are facing in various types of hardships, particularly in Iraqi hospitals. They gradually lose compassion and become less willing to work as a result of work environment pressures and attempting to provide good nursing care, which the patients require the most, and being exposed to the suffering of newly admitted patients to the neurological ward.

Conclusion

The study contributed to the identification of a common but undiagnosed phenomenon in nursing: compassion fatigue, as evidenced by high levels of severe compassion fatigue among nurses working in neurological wards. Compassion fatigue affects nurses as human beings and caregivers. As a result, their patients suffer. Because the majority of the subjects were young age nurses suffering from a severe level of compassion fatigue, it may have a powerfully affecting their personal as well as professional lives, negatively affecting their ability to provide competent care for their patients.

Recommendation

Preparing future nurses by enhancing the curriculum in a way that arm nursing students with effective strategies of managing compassion fatigue. Improving nursing leaders' roles in diagnosing and addressing compassion fatigue among nurses by educating them regarding compassion fatigue phenomena and the effective strategies to deal with it; supporting them financially by the Ministry of Health to shape their ideas regarding what their nursing staff need, such as weekend trips with co-workers. Heart Math intervention should be recommended to nurses who are at risk of developing compassion fatigue, which is a physiological and psychological technique to build resiliency in oneself.

Limitations: a significant percentage of nurses were affected by the third wave of the COVID-19 pandemic during the data collection phase, which also limited the participation rate in the study.

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Conflicts of Interest

None.

References

- Alharbi, J., Jackson, D., & Usher, K. (2019). Personal characteristics, coping strategies, and resilience impact on compassion fatigue in critical care nurses: A cross-sectional study. *Nursing & Health Sciences*.22(1). 20-27. doi:10.1111/nhs.12650 (<https://doi.org/10.1111/nhs.12650>)
- Alharbi, J., Jackson, D., & Usher, K. (2019). Personal characteristics, coping strategies, and resilience impact on compassion fatigue in critical care nurses: A cross-sectional study. *Nursing & Health Sciences*.22(1). 20-27. doi:10.1111/nhs.12650 (<https://doi.org/10.1111/nhs.12650>)
- Al-Hawdrawi, H, H., AL-Fayyadh, S., Diener, E., Bakey, S., Wright, V., Alobaidi, W. (2017). The Lived Experience of Iraqi Nurses who Live and Work in Communities Impacted by War or Terrorist Threat. *Research Journal of Pharmacy and Technology*. 10(7): 2058-2062. doi: 10.5958/0974-360X.2017.00359.6
- Al-Razaq, A.S.A., AL-Hadrawi, H.H., Ali ,S.A. (2018) . Compassion Fatigue among Healthcare Professionals Working in Intensive Care Units. *Indian Journal of Public Health Research & Development* .9(8) .1092-1093. <http://dx.doi.org/10.5958/0976-5506.2018.00876.8>
- American Association of Colleges of Nursing [AACN], (2021). The Impact of Education on Nursing Practice. Retrieved from <https://www.aacnnursing.org/news-information/factsheets/impact-of-education>
- Aslan, H., Erci, B., & Pekince, H. (2022). Relationship Between Compassion Fatigue in Nurses, and Work-Related Stress and the Meaning of Life. *Journal of religion and health*, 61(3), 1848–1860. <https://doi.org/10.1007/s10943-020-01142-0>
- Burgess, N. (2018). *Burnout and compassion fatigue in emergency care nurses: Factors that influence development*. [Doctoral dissertation, Dublin Business School]. Google

- Scholar.
https://esource.dbs.ie/bitstream/handle/10788/3447/hdip_burgess_n_2018.pdf?sequence=1&isAllowed=y
- Caporusso, M. (2018) . *Compassion Fatigue Experienced by Nurses in Acute Medical Surgical Settings*. [Doctoral dissertation, Touro University]. GoogleScholar.http://www.doctorsofnursingpractice.org/wp-content/uploads/project_form/abstract_190618061358.pdf
- Cocker, F. Joss, N. (2016) . Compassion Fatigue among Healthcare. *International Journal of Environmental Research and Public Health*. 13 (618) ,2-4. doi:10.3390/ijerph13060618
- Gustafsson, T., & Hemberg, J. (2022). Compassion fatigue as bruises in the soul: A qualitative study on nurses. *Nursing Ethics*, 29(1), 157–170. <https://doi.org/10.1177/09697330211003215>
- Hinderer, K. A., VonRueden, K. T., Friedmann, E., McQuillan, K. A., Gilmore, R., Kramer, B., & Murray, M. (2014). Burnout, Compassion Fatigue, Compassion Satisfaction, and Secondary Traumatic Stress in Trauma Nurses. *Journal of Trauma Nursing*, 21(4), 160–169. doi:10.1097/JTN.0000000000000055
- Lombardo, B., & Eyre, C. (2011). Compassion fatigue: a nurse's primer. *Online journal of issues in nursing*, 16(1), 3. <https://doi.org/10.3912/OJIN.Vol16No01Man03>
- Lourenção, L. G., Penha, J. G. M., Galvão, D. M., Neto, F. R. G. X., dos Santos, B. M. P., Cunha, I. C. K. O., ... & Foss, M. H. D. A. (2022). *Compassion Fatigue in Nursing Professionals from Complex Care Units of a Brazilian University Hospital*. Preprints. doi: 10.20944/preprints202201.0379.v1.
- Mchugh, M. D., Kelly, L. A., Sloane, D. M., & Aiken, L. H. (2011). Contradicting Fears, California's Nurse-To-Patient Mandate Did Not Reduce the Skill Level Of The Nursing Workforce In Hospitals. *Health Affairs*, 30(7), 1299–1306. doi:10.1377/hlthaff.2010.1118
- Mudallal, R. H., Othman, W. M., & Al Hassan, N. F. (2017). Nurses' Burnout: The Influence of Leader Empowering Behaviors, Work Conditions, and Demographic Traits. *Inquiry: a journal of medical care organization, provision and financing*, 54, 1-3. <https://doi.org/10.1177/0046958017724944>
- Öztürk, S. Karabulutlu, Ö. (2021). Examination of the relationship between compassion fatigue and life satisfaction in midwives, Kars province, Turkey. *Population Medicine*. 3(31). 1-7. <https://doi.org/10.18332/popmed/143260>
- Perry, L.K. (2006) . Palliative Care in Parkinson's Disease: Implications for Neuroscience Nursing. *Journal of Neuroscience Nursing*. 38(2).107-108.
- Peters E. (2018). Compassion fatigue in nursing: A concept analysis. *Nursing forum*, 53(4), 466–480. <https://doi.org/10.1111/nuf.12274>
- Ruiz-Fernández, M. D., Ramos-Pichardo, J. D., Ibáñez-Masero, O., Cabrera-Troya, J., Carmona-Rega, M. I., & Ortega-Galán, Á. M. (2020). Compassion fatigue, burnout, compassion satisfaction and perceived stress in healthcare professionals during the COVID-19 health crisis in Spain. *Journal of clinical nursing*, 29(21-22), 4321–4330. <https://doi.org/10.1111/jocn.15469>
- Sacco, T. L., Ciurzynski, S. M. Harvey, Megan E. Ingersoll, G.L. (2015). Compassion Satisfaction and Compassion Fatigue Among Critical Care Nurses. *Critical Care Nurse*. 35(4). 32-42. https://fisherpub.sjfc.edu/nursing_facpub/9
- Tej, Y., Hegde, A., & Shetty, C. (2021). Functional and radiological outcome of single-stage surgical treatment of late presenting developmental dysplasia of the hip. *Journal of Natural Science, Biology and Medicine*, 12(2), 198-202. <https://doi.org/10.4103/jnsbm.jnsbm-13-21>

- Thrivani, R., Rukhsar, I., Ramesh, D. V., Patil, S., Byatnal, A., & Nair, D. (2020). Development and clinical evaluation of transmucosal mucoadhesive patch of lornoxicam for the odontogenic pain management: A preliminary study. *Journal of Natural Science, Biology and Medicine*, 11(1), 12-16. https://doi.org/10.4103/jnsbm.JNSBM_224_18
- Salmond, E., Ames, M., Kamienski, M., Watkins, V. A., & Holly, C. (2017). Experiences of compassion fatigue in direct care nurses: a qualitative systematic review protocol. *JBIR Database System*, 15(7), 1805–1811. <https://pubmed.ncbi.nlm.nih.gov/28708744/>
- Stewart-Amidei, C., Villanueva, N., Schwartz, R., R., Delemos, C., West, T., Tocco, S., Cartwright, C., Jones, R., Blank-Reid, C., Haymore, J. (2010). American Association of Neuroscience Nurses Scope and Standards of Practice for Neuroscience Advanced Practice Nurses, *Journal of Neuroscience Nursing*. 42(3). doi: 10.1097/JNN.0b013e3181d5bf14
- Thrivani, R., Rukhsar, I., Ramesh, D. V., Patil, S., Byatnal, A., & Nair, D. (2020). Development and clinical evaluation of transmucosal mucoadhesive patch of lornoxicam for the odontogenic pain management: A preliminary study. *Journal of Natural Science, Biology and Medicine*, 11(1), 12-16. https://doi.org/10.4103/jnsbm.JNSBM_224_18