

The Impact of Work Environment on Job Satisfaction and Stress among Haemodialysis Nurses in Malaysia: A Concept Paper

¹Zaima Mat Yusuf, ²Yee, Bit-Lian

Abstract—Haemodialysis(HD) work environment are known for their hefty work task and the patients require a high level of medical treatment and supervision. Most international studies related to nursing work environment focused at hospital level. Therefore, there's a need to explore the HD work environment and its impact on job satisfaction and stress among the nurses in private or charity HD centres. According to Kanter's theory, working environment with access to information, resources, support, and sense of empowerment among employees improves employees' job satisfaction and organization outcome. Nurses felt stress when patient's condition deteriorates, likewise, high workload and staff turnover, infectious diseases, coping with emergencies, patient behaviour and death as other sources of stress. This concept paper is to answer 'What is the relationship between HD nurses' perceptions of their work environments with job satisfaction and stress?' A cross-sectional self-administered questionnaire will be employed to answer the research question. A regression model to test factors associated with HD nurse's job satisfaction, stress and working environment. Understanding different aspects of work environment is vital in improving HD nurses job satisfaction and stress.

Index Terms—HD nurse, job satisfaction, stress, work environment.

¹Cluster of Applied Sciences, Open University Malaysia, zaima_matyusuf@oum.edu.my

²Cluster of Applied Sciences, Open University Malaysia, yeebl@oum.edu.my

I. INTRODUCTION

Dialysis procedure is prescribed to end stage kidney disease (ESKD) patients through their life until the patients go through kidney transplant or depart this life. In Malaysia, the HD treatment is given three time per week for four hours on each treatment and it being offered by various healthcare providers such as hospitals, private dialysis centres and non-government organisation (NGO) centres with a highly technical work environment. The nursing care of the dialysis patients are provided for many years which results in a unique nurse-patient relationship.

II. BACKGROUND OF THE STUDY

Over the last 10 years, the totality of dialysis patients undergoing dialysis therapy in Malaysia has increased from 4,104 in 2007 to 7,067 in 2015 and at least 7,663 in 2016[1]. However, in 2016, the nurse to patient ratio in Malaysia is only 1:297[2]. This situation of nurses shortages may influence job satisfaction and stress among HDnurses.

Job satisfaction among healthcare professionals is impacted by both intrinsic and extrinsic factors as well as occupational and non-occupational variables[3].Technology will continue to impact the health care system. However, HD nursing is concerned with applied and industrial sciences that encompasses a universal aspect of the patient, including controlling their co-morbidities, community-based issues, nourishment, and learning needs. In the domain of in-centre dialysis therapies, these skills are much more vital[4]. Additionally,studyfound that with the new technological changes which is rapidly changing the present and the future of dialysis treatment, there is a concern that the level of stress and anxiety that nurses will experience in the workplace can be expected to increase[5]. Hence, a positive work environment which is parallel with the changes will contribute towards a higher level of positive emotional state derives from the nursing responsibilities, reduce job stress and the experience of physical and emotional exhaustion among nurses[5]

III. PROBLEM STATEMENT

Until very recently, to the author's knowledge, international studies have primarily focused on variability at the hospital level; however, insights at the nursing HD unit level can reveal key factors in the nurse practice environment [6]. What is not yet clear is the nature of work environments in the HD centres own by private and charity centres. Therefore, there is a need to investigate for the first time, the workplace environment of the HD nurses and the resultant effect on job satisfaction, stress and burnout. Research has shown that hospitals with better nurse staffing and work environments have better nurse outcomes, less burnout, job dissatisfaction, and intention to leave the job[7]. In the same manner,another studydiscovered that work environment and average patient-to-nurse ratio have considerable effects on patient's health status that is influenced by the nursing intervention.[8].

Heavy workload and poor work environment is a classic problem in most health institution that contributed tonurses burned out and feeling of dissatisfied with their job [8]. However, to date, there are limited studies that have investigated the association between the relationship of work environment attributes to patient and nurse outcomes in dialysis settings [9]. In addition, nurses working in a HDcentre (private, NGO or charity) has its own challenge pertaining to the ability to obtain knowledge, resources, encouragement, and the opportunity of engaging

in professional commitment towards enhancing their personal skills and proficiency throughout their careers. First, these units managed to deliver good HD care although with low physical capacity compared against hospital-based dialysis unit. Second, these centres are operating with weak organizational structure and facilities for treating moderate to severe dialysis cases which eventually requires higher medical expenses involving patient transfers to tertiary referral hospitals. Third, staff shortages especially in secluded HD centres which may affect the quality of care [10].

Another significant concern is when the Private Healthcare Facilities and Services Act was implemented in 2006, it became mandatory for all dialysis centres in Malaysia to have units that are equipped and manned by fully-trained dialysis nurses. However, there were 560 HD centres extending throughout Malaysia and being operated by NGOs and private firms, but only 326 have an official permit from the health ministry [11]. Thus far, it has been reported that the Health Ministry of Malaysia freezes any HD facilities if there are operating below the required standard such as those faced with shortages of HD nurses in order to prevent patient's safety issues [12]. Likewise, a good organizational structure within dialysis facilities helps to facilitate excellent inter-department communication and interaction. Previous studies of organizational structure have revealed a variety of problems, such as bloated management and poor communication as a result of a bad organizational system [13]. This view is supported by [14] who writes that health professionals are susceptible to commit errors and adverse events when the technical and organizational processes are complex and poorly planned. Thus, dialysis centres need to be effectively operated as highly trusted organizations for improving patient safety and better patient outcome.

IV. RESEARCH OBJECTIVES

A. General Objective

To investigate the contributing factors of satisfaction with the work environment, job satisfaction, and stress among nurses in the central region of Peninsular Malaysia.

B. Research Questions

1. What is the association of work environment satisfaction, job satisfaction and stress with demographic variables among HD nurses?
2. What is the degree of satisfaction with respect to the work environment towards overall job satisfaction, stress and burnout for nurses working in the HD setting?
3. Does the level of satisfaction towards the working environment have significant effects on job satisfaction, job stress and burnout?

V. THEORETICAL FRAMEWORK

Empowering and supportive environment has been identified from preceding research as the main factor that supports and improve the level of job satisfaction in nurses. In this study, the researcher will use Kanter's Structural Empowerment Theory as the guiding framework which examines the power and structural within the work environment and the resultant influence on job satisfaction, stress and burnout [15]. The elements embedded inside structural empowerment are for example policies, councils and processes. These elements directly empower nurses to practice in a professional and autonomous manner to achieve the highest degree of clinical excellence and

professional fulfilment [16].

VI. LITERATURE REVIEW

Nursing and healthcare deal with multiple aspects of patient care. HD nurses provide inpatient and outpatient care to diverse types of people, for example people with different ethnicity, set of beliefs, ages, faiths, and more. Working in HD centres (private, NGO or charity) has its own challenges related to the work environment pertaining to access to information, resources, formal and informal power, support, and the opportunity to learn and develop. Several studies have proven that positive work environment results in positive job satisfaction, reduce stress and burnout among healthcare professionals.

A. HD Care Delivery

HD nurses provide long-term care to renal patients through their role as a peacemaker in a highly technical and ambiguous health industry.

In Malaysia, there are more than 40,000 individuals on dialysis with more than 7,000 new patients every year [17]. As a result, increasing numbers of HD nurses and technician is needed in the future [18]. As one of the largest health professional groups, nurses play an integral role act as doctors' assistants, providing health care services and promoting patient well-being [10]. However, with more ongoing expansion of hospitals, there will be a severe shortage of nurses [19]. With the increment in total number of dialysis patients every year, it is expected that the shortage of nurses will become a thorny problem for healthcare managers [20].

While the process of renal nursing has essentially remained the same for centuries, the practice of HD care delivery has changed significantly in recent decades [20]. Therefore, healthcare institutions need to embrace changes in the work processes due to globalization, advancement in dialysis technologies and exploration of high quality of services [21]. Hence, it has caused the HD work environment into highly technical field requiring them to master complex HD equipment in order to provide safe, efficient and effective patient care [22].

B. HD Work Environment

Working in a HD centre (private, NGO or charity) has numerous and multifactorial challenges [23]. Therefore, HD nurses need to have other essential nursing distinctive attributes which include the ability to demonstrate independent role, a thorough theoretical and practical understanding of dialysis, and effective management practices to provide a timely, effective, personalized course of HD care while remaining within the mandates of the governing agencies [4]. Upon reviewing all of these elements there should be systems and strategies that can provide empowering work structure to the specialized role of HD nurse [22].

A nurse with an access to information (values, goals, and policies pertaining to the organization) is described as being able to be involved in organizational decisions, policies and goals and pass the information on to other coworkers and subordinates [24]. On the other hand, sociodemographic factors, including age and length of experience, and the work environment were associated with the level of HD nurses' burnout, psychological distress and job satisfaction [25].

More recent attention has focused on the provision of how management and the work environment play an important role in the retention of staff. Data from several sources have identified the increased desire of nurses to remain employed with organizational influences [26]. It has also been demonstrated that organizational and

management support is important in retaining nursing staff [4]. This view is supported by a study that discovered the significance of organizational support and the delivery of adequate training, supplies of daily utility, and staffing to avoid the loss of nephrology staff [27].

C. Job Satisfaction

Nurses are the pillar of any healthcare facilities, hence their skills are critical in ensuring quality care to the patients. However, internal and external factors, as well as occupational and non-occupational variables may have an effect on the nurse's job satisfaction level [28]. On the contrary, job dissatisfaction and nursing shortage remain as two main challenges in the nursing system [5]. To add on, the interaction among nurses and their superiors, salary and career advancement, competency in delivering nursing care, convenience accessibility of support services, self-directing freedom in nursing practice and workload were also described as the factors which influence job satisfaction among nurses [29]. Undoubtedly, quality collaborated care by the health providers' was the essential determinant of patient satisfaction [30].

It has been reported that inadequate resources and supports in fulfilling nurses workload has created a negative job satisfaction including career change [29]. In the same manner, this kind of occupational stress decreases job satisfaction and reduces nursing quality [3].

D. Job Stress and Burnout

In an investigation of workload and burnout, it was reported that the relationship between HD nurse and their patients are more profound when compared with other hospital unit due to a high level of technology and long-term contact with the same patients [31]. Therefore, this situation has created a sense of failure and powerlessness feelings among HD staff when a patient's condition deteriorates or frustration at witnessing patients' noncompliance [32]. Recent evidence suggests that a stressor may be an external event that is perceived as a strain or demand resulting in negative physical, mental, emotional or psychological consequences [33]. Some notable examples are excessive workload, high labour turnover, exposure to infectious microorganism in human blood, probability of contamination, dealing with emergencies, patient conduct and patient death [8]. Thus, the process of coping with stress involves adapting the individual to new situations and environments, and there must be a balance of physiological and psychological functions that will result in the capacity to make new demands [34].

Working in an environment with a limited workforce, difficulty in accessing resources, high workload, poor salary and absence of a career advancement may pose serious health risks to nurses [35]. Moreover, poor interconnection between health care providers has been identified as a major contributing factor to the development of stress [36]. In the analysis of job stressors and job satisfaction, high levels of verbal and physical abuse from patients were identified as additional factors that created high levels of job stress on registered nurses beside patient's mental health problems [24]. Another study found that respondents described workforce shortfalls, increased stress resulting in higher rate of susceptible to disease among nurses, less cost-efficient and patient safety is compromised [38].

Burnout is described as a mental disorder that results from the accumulation of significant distress caused by a heavy work task and multiple works demands in nurses' work system [39]. Moreover, it has been established that burnout can have detrimental effects on the nurse's health and well-being, and compromise the degree of desired nursing care and patient safety [24]. Another review found that burnout has been linked to higher rates of absenteeism than the general population, and to increased nurse turnover and decreased job satisfaction [40]. In the

same vein, heavy perceived nurse workloads were associated with one component of burnout, emotional exhaustion [39].

VII. METHODOLOGY

A. Study Design

The study will be conducted using a cross-sectional study design.

B. Study Setting

The study will take place in the private and non-government HD centres in the central region of Peninsular Malaysia.

C. Sample Population and Sample Size

The population of this study is included HD nurses working in private and NGO dialysis centres in Malaysia. The study will randomly select a few dialysis centres in the Central Region: Selangor, federal territories of Kuala Lumpur and Putrajaya.

VIII. ETHICAL CONSIDERATION

The research will comply with the commonly agreed international standards for good practice in research. To abide with the institution research ethics policy and procedures, ethics application will be sent to OUM Research Committee and the management of the selected private and non-government organization (NGO) HD centres. The researchers also will fully disclose the nature of the study to the participants, and will alert them about their rights to participate or to refuse to participate in the study.

IX. DATA COLLECTION PLAN

A. The Sampling and Data Collection Procedure

A cross-sectional sample of HD nurses will be drawn from the Association of Dialysis Medical Assistant and Nurses (ADMAN) membership. ADMAN is the body for nurses and medical assistants providing dialysis care in Malaysia with approximately 1,207 members. The sample size for this study is calculated by using Krejcie and Morgan table, hence, the approximate sample size according to the table will be 291 participants for the study.

B. Data Collection Method

The study adopts the questionnaires used by previous researchers. The questionnaires will consist of demographic and work characteristics questions, and measures of the work environment, job satisfaction and job stress in the non-hospital dialysis facilities. This study will customize the items accordingly in order to suit the respondents in the dialysis centres. Data will be collected between October and November 2019.

C. Instrument

The questionnaires consist of four parts which will be labelled as part A, B, C and D. The initial part will be the

demographic characteristics questions. The second part is the Practice Environment Scale which contains the Nursing Work Index (PES-NWI). The third part is the Minnesota Satisfaction Questionnaire (MSQ) which is a free source from Vocational Psychology Research, University of Minnesota. The last part of the questionnaire is the Cohen Perceived Stress Scale (PSS-10).

D. Validity and Reliability

The questionnaire in the study is notable and stable over time instrument. Former scientists provide outstanding coefficient alpha values. The Cronbach Coefficient alpha for the Practice Environment Scale which contains the Nursing Work Index PES-NWI was 0.89 and 0.81[41]. In the same manner the Minnesota Satisfaction Questionnaire (MSQ) provide excellent coefficient alpha values ranging from .85 to .91 [42]. A Cronbach's Alpha coefficient of 0.72 was obtained for Cohen Perceived Stress Scale (PSS-10). This affirmed the distinctive internal consistency and stability of the scale across repeated measure tests (0.93). Therefore, PSS-10 has good internal consistency and reliability[42]. Content validity was sought from existing literature and discussion with the team.

E. Pilot Study

The questionnaire will be pre-tested with a small number of respondents in order to identify or refine the research question, discover what methods are best for pursuing it, and estimate how much time and what resources will be necessary to complete the larger final version of the study. The researcher will accept Cronbach alpha value of greater than .70 for the internal consistency. This pilot study will not be included in the real study.

F. Data Analysis

Descriptive analysis will be described by mean, SD or median. For the association between variables, t-test, chi-squared and Pearson correlation will be used for the comparison of the variables (Normality criteria met). If non-normality, non-parametric tests will be used: Man-Whitney and Kruskal-Wallis. A regression model will be run for factors associated with HD nurse's job satisfaction and working environment, with adjusting for years of experience in the dialysis centre, post-basic and level of stress. Value $p = 0.05$ is taken as significance.

G. Limitation of the Study

First of all, the study is going to be carried out in private or NGO dialysis centres. Thus, the result might only be generalizable to the above population. In other words, the findings might be different if the scope is increased to include more dialysis facilities including in the hospitals since different dialysis settings might pose different characteristics.

Another drawback is the study only measures the perception of respondents for each item on some questionnaires. However, should the presumption score also be taken into account, the results would be more revealing when the gap score between perception and expectation is calculated.

Employing the cross-sectional design is another potential concern because the HD nurse's perception score is only measured once throughout the study. Since nursing care of renal patients in the dialysis work environment is a long term commitment, the result would be more informative if the longitudinal design is employed.

X. CONCLUSION

The most important resource for healthcare organization is the staff nurses who are the main pillar of any healthcare facilities. They make sufficient and tremendous contribution to any healthcare organization. Vast attention should therefore, be paid to them. Healthcare organization can only realize its goals and objectives through its employees' performance. HD nurses as employees will strive to perform when they feel that their immediate environment state corresponds with their obligations. The type of work environment in which they operate will determine whether they perform or not, it's through their performance that organizational performance can be realized.

REFERENCES

1. L. Y. Ngo, G. Ahmad, G. B. Leong, W. H. Seng, and L. D. Guat, "Renal Replacement Therapy In Malaysia," Kuala Lumpur, Malaysia, 2015.
2. "Nisbah Jururawat Dan Penduduk Malaysia Kini 1:297," *M.Star*, Kuala Lumpur, Malaysia, 2016.
3. R. Diaz, Laurence, Rhodes, *Job Satisfaction : Influencing Factors, Gender Differences and Improvement Strategies*. New York: Nova Science Publishers, Inc., 2018.
4. A. Peters, "Supporting and Retaining Nephrology Nurses New to the Peritoneal Dialysis Specialty," *Nephrol. Nurs. J.*, vol. 40, no. 1, pp. 21–24, 2013.
5. H. Muhawish, O. A. Salem, and O. G. Baker, "JOB RELATED STRESSORS AND JOB SATISFACTION AMONG MULTICULTURAL NURSING WORKFORCE.," *Middle East J. Nurs.*, vol. 13, no. 2, pp. 3–16, Apr. 2019.
6. P. Van Bogaert, C. Kowalski, S. M. Weeks, D. Van heusden, and S. P. Clarke, "The relationship between nurse practice environment, nurse work characteristics, burnout and job outcome and quality of nursing care: A cross-sectional survey," *Int. J. Nurs. Stud.*, 2013.
7. M. Halm, "The Influence of Appropriate Staffing and Healthy Work Environments on Patient and Nurse Outcomes.," *Am. J. Crit. Care (AM J CRIT CARE)*, vol. 28, no. 2, pp. 152–156, 2019.
8. M. D. McHugh and C. Ma, "Wage, Work Environment, and Staffing: Effects on Nurse Outcomes," *Policy, Polit. Nurs. Pract.*, vol. 15, no. 0, pp. 72–80, 2014.
9. P. Van Bogaert, D. Van Heusden, O. Timmermans, and E. Franck, "Nurse work engagement impacts job outcome and nurse-assessed quality of care: Model testing with nurse practice environment and nurse work characteristics as predictors," *Front. Psychol.*, vol. 5, no. NOV, pp. 1–11, 2014.
10. T. W. Ferguson *et al.*, "An economic assessment model of rural and remote satellite hemodialysis units," *PLoS One*, vol. 10, no. 8, pp. 1–12, 2015.
11. L. F. FONG, "Ministry says no to new dialysis centres," PUTRAJAYA, p. 1, 16-Dec-2013.
12. R. Chidambaram, "What Is in Store for Us at World Kidney Day 2016? The Malaysian Experience," *Malays J Med Sci.*, vol. 23, no. 3, pp. 95–96, 2016.
13. Saviotti, "Knowledge, Information and Organisational Structures," in *Authority & Control in Modern Industry*, Taylor & Francis Ltd, 2015, pp. 120–140.
14. P. . Lucia.D, "Patient safety in hemodialysis," *J. Nurs. UFPE / Rev. Enferm. UFPE*, vol. 12, no. 12, pp. 3360-3367., 2018.
15. R. M. Kanter, "Men and women of the corporation revisited," *Manag. Rev. [serial online]*, vol. 76, no. 3, pp. 14–16, 1987.

16. J. Kussmaul, "Workplace environment for nurses and healthcare assistants in residential aged care facilities in New Zealand," *Australian Journal of Advanced Nursing (AUST J ADV NURS)*, vol. 36, no. 4, pp. 6–18, 2019.
17. M. Murugesan, "A new benchmark for kidney care," Kuala Lumpur, Malaysia, p. 1, 28-Mar-2019.
18. J. R. McLaughlin, Daniel B., Olson, *Healthcare Operations Management*. Chicago, Illinois: Health Administration Press, 2017.
19. W.-T. Chien and S.-Y. Yick, "An Investigation of Nurses' Job Satisfaction in a Private Hospital and Its Correlates," *Open Nurs. J.*, vol. 10, no. 1, pp. 99–112, 2016.
20. X. Dan *et al.*, "Improving job satisfaction of Chinese nurses: the positive effects of structural empowerment and psychological capital Editor 's summary," *TMR Integr. Nursing*, vol. 2, no. 4, pp. 169–177, 2018.
21. C. L. Siqueira, A. C. F. Bernadeli, R. C. Gasparino, L. B. Feldman, I. C. K. O. Cunha, and R. A. Oliveira, "Knowledge of responsible technical nurses on management skills: a qualitative study," *Rev. Bras. Enferm.*, vol. 72, no. 1, pp. 43–48, 2019.
22. J. Gardner and J. Walton, "Striving to be heard and recognized: nurse solutions for improvement in the outpatient hemodialysis work environment.," *Nephrol. Nurs. J.*, vol. 38, no. 3, pp. 239–53, 2015.
23. U. Okafor, F. Wokoma, and I. Ekwem, "Challenges of kidney care in a resource poor nation: A study of private kidney care centre in Nigeria," *Niger. Med. J.*, 2012.
24. C. Doré, L. Duffett-Leger, M. McKenna, and M. Breau, "Perspectives on burnout and empowerment among hemodialysis nurses and the current burnout intervention trends: A literature review," *CANNT J.*, vol. 27, no. 4, pp. 16–31, 2017.
25. T. Martin, "Formal and Informal Power, Access to Work Empowerment Structures, and Intent to Stay," *Thesis*, no. December, 2010.
26. S. Tasneem, A. S. Cagatan, M. Z. Avci, and A. C. Basustaoglu, "Job Satisfaction of Health Service Providers Working in a Public Tertiary Care Hospital of Pakistan," *Open Public Health J.*, vol. 11, no. 1, pp. 17–27, 2018.
27. A. Jetha, L. Kernan, and A. Kurowski, "Conceptualizing the dynamics of workplace stress: A systems-based study of nursing aides," *BMC Health Serv. Res.*, vol. 17, no. 1, pp. 1–12, 2017.
28. O. Chegini, Zahra; Janati, Ali; Asghari-Jafarabadi, Mohammad; Khosravizadeh, "Organizational commitment, job satisfaction, organizational justice and self- efficacy among nurses," *Nurs. Pract. Today*, vol. 6, no. 2, pp. 83–90, 2019.
29. U. A. Lim LP, "A Conceptual Analysis of Nurses Customer-Oriented Behavior , Job Satisfaction and Affective Commitment in Malaysia," *Int. J. Caring Sci.*, vol. 8, no. 3, p. 2015, 2015.
30. E. Batbaatar, J. Dorjdagva, A. Luvsannyam, M. M. Savino, and P. Amenta, "Determinants of patient satisfaction: A systematic review," *Perspectives in Public Health*. 2017.
31. S. B. Araya, M. C. A. Mantuliz, and V. V. Parada, "Relationship between workload and burnout in.pdf," *Enferm. Nefrol.*, vol. 15, no. 1, pp. 46–55, 2012.
32. M. Nobahar, "Exploring experiences of the quality of nursing care among patients, nurses, caregivers and physicians in a haemodialysis department," *J. Ren. Care*, vol. 43, no. 1, pp. 50–59, 2017.
33. G. Dolan, B. A. Hons, E. Strodl, E. Hamernik, and B. A. Hons, "Why Renal Nurses Cope so Well with

- Their Workplace Stressors.," *J. Ren. Care*, vol. 38, no. 4, pp. 222–233, 2012.
34. W. I. S. Stress, S. Situations, and M. O. F. Framing, "COPING MECHANISMS : THE BASICS WHAT IS STRESS ?," in *Stress and Coping Mechanisms : Manage Your Stress and Live a Happier Life*, Place of publication not identified, 2016, pp. 5–15.
 35. V. Santos, Longuiniere, Vieira, Amaral, Sanches, "Occupational Stress: the Exposure of an Emergency Unit Nursing Team.," *Rev. Pesqui. Cuid. e Fundam.*, vol. 11, no. 2, pp. 455–463, 2019.
 36. C. R. Hopkins, *Job Stress : Risk Factors, Health Effects and Coping Strategies*. Hauppauge, New York: Nova Science Publishers, Inc, 2015.
 37. C. R. Small, S. Porterfield, and G. Gordon, "Disruptive behavior within the workplace," *Appl. Nurs. Res.*, vol. 28, no. 2, pp. 67–71, 2015.
 38. S. Jones-Berry, "Struggling to keep patients safe: what our survey found.," *Nurs. Stand.*, vol. 33, no. 5, pp. 19–23, 2018.
 39. M. MacPhee, V. Dahinten, and F. Havaei, "The Impact of Heavy Perceived Nurse Workloads on Patient and Nurse Outcomes," *Adm. Sci.*, vol. 7, no. 1, p. 7, 2017.
 40. M. D. Mchugh, A. Kutney-Lee, J. P. Cimiotti, D. M. Sloane, and L. H. Aiken, "Nurses' Widespread Job Dissatisfaction, Burnout, And Frustration With Health Benefits Signal Problems For Patient Care," *Health Aff.*, vol. 30, no. 2, pp. 202–210, 2011.
 41. A. Maziah, O. Wichaikhum, and R. Nantsupawat, "Nursing Practice Environment and Patient Outcomes in University Hospitals in Malaysia," *Heal. Environ. J.*, vol. 3, no. 1, pp. 16–26, 2012.
 42. H. Martins and M. T. Proença, "Minnesota satisfaction questionnaire: psychometric properties and validation in a population of portuguese hospital workers," *Investig. e Interv. em Recur. Humanos*, no. 3, 2014.
 43. GOKILA R, ARUNKUMAR P, DEEPAKKUMAR S, ATHUL RAVI, SAKTHIVEL S. "HOME AUTOMATION USING SMART MIRROR WITH RASPBERRY PI." *International Journal of Communication and Computer Technologies* 7 (2019), 33-34. doi:10.31838/ijccts/07.SP01.08
 44. Doruk, R.Ö. Control of hopf bifurcations in hodgkin-huxley neurons by automatic temperature manipulation (2018) *NeuroQuantology*, 16 (2), pp. 59-74.
 45. Gaiseanu, F. Quantum-assisted process of disembodiment under near-death conditions: An informational-field support model (2017) *NeuroQuantology*, 15 (1), pp. 10-17.