



**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCE
SCHOOL OF NURSING AND MIDWIFERY
DEPARTMENT OF NURSING**

**MAGNITUDE AND FACTORS ASSOCIATED WITH BURNOUT AMONG
HEALTH CARE PROVIDERS WORKING IN NEONATAL INTENSIVE
CARE UNIT OF SELECTED ADDIS-ABABA PUBLIC HOSPITALS, 2025**

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PROVIDERS WORKING IN NICU OF SELECTED ADDIS-ABABA PUBLIC HOSPITALS

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This thesis by Dersolign Berihun is accepted in its present form by the board of examiners as satisfactory, the requirement for the degree of Master of Science in neonatal nursing

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LIST OF ACRONYMS AND ABBREVIATIONS:

DP	Depersonalization
EE	Emotional exhaustion
FAB	Factors affecting burnout
FAHCWB	Factors affecting healthcare workers' burnout
HCW	Healthcare worker
IRRB	Institutional Research Review board
MBI	Maslach Burnout Inventory
MBI-HSS	Maslach Burnout Inventory-Human Services Survey
MIICSH	Menilik II Comprehensive Specialized Hospital
NICU	Neonatal Intensive Care Unit
PA	Personal accomplishment
PI	Principal Investigator
SPHMMC	St Paul's Hospital Millennium Medical College
SPSS	Statistical Package for Social Science
TASH	Tikur Anbessa Specialized hospital
WHO	World Health Organization

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ABSTRACT:

Introduction: Burnout is one of a psychological syndrome caused by chronic workplace stress, manifested as hopelessness, fatigue, and negative attitudes towards work. It is particularly prevalent among health professionals due to demanding nature of working condition. Different socio-demographic, organizational, and work-related factors were contributed for the development to burnout. Burnout, if not addressed promptly, may impact organizational outcome, quality of care, and individual (provider) health, like leading to depression, addiction, and suicidal ideation. Addressing burnout is crucial for health professionals' well-being and maintaining quality care in the healthcare system.

Objectives: to determine the magnitude and factors associated with burnout among health care personnel's working in NICUs of at selected Addis Ababa public hospitals.

Methods: A quantitative cross-sectional study methodology was used to collect data from healthcare providers working in the NICUs of several Addis Abeba public hospitals. The study included all healthcare providers working in NICUs at selected public hospitals, with the exception of those working for less than 6 months or on annual leave. Structured, self-administered, and validated questionnaires were used to collect data through Kobo Toolbox, which was then exported to SPSS version 26 for analysis. One week before data collection, a pretest was conducted on 10% of the sample size and to examine the relationship between burnout and its predictor, bivariate and multivariable logistic regression were utilized. The final result of this study was expressed in graphs and tables, Frequency and percentage were also utilized for categorical variables. Finally, AOR with a 95% CI and p-value which is less than 0.05 were used to identify independent variables significantly associated with outcome variables.

Result: A total of 291 health care providers were recruited, with a response rate of 271 (93.1%) and 96 (35.4%) of them were suffered by professional burnout. A significant association were observed between health care provider burnout and working more than 62 hours per week [AOR=4.436; 95% CI: (2.015, 9.767), p-value 0.000], monthly income less than 10,000 per month [AOR=3.133; 95% CI: (1.346, 7.296), P-value 0.008], slept less than 4 hours per day [AOR=10.98; 95% CI: (4.8-25.118), p-value 0.000], frequent exposure of caring dying neonate [AOR=4.424; 95% CI: (1.713, 11.424), P-value 0.002], had no interest the profession

[AOR=0.325; 95% CI: (0.121, 0.87), p-value 0.025], job dissatisfaction [AOR=3.882; 95% CI: (1.69, 8.915), P-value 0.001], work related physical/verbal violence [AOR=0.156; 95% CI: (0.065, 0.373), P-value 0.000].

Conclusion: The finding shows that a significant number of health care providers suffer from professional burnout, and this study also showed that different predictor variables are significantly associated with professional burnout. Among these, job dissatisfaction, no interest in the profession, work-related physical/verbal violence, working longer than 62 hours per week, less than 4hrs sleep per day during duty time, and a monthly income of less than 10,000 ETB per month were predictor variables that were significantly associated with provider burnout.

Key words: magnitude, health care provider, burnout, NICU, Addis Ababa, Ethiopia

1. INTRODUCTION

1.1. BACKGROUND

Burnout is one of a psychological syndrome caused by chronic work-related stress that has not been successfully managed. Freudenberg defined burnout for the first time in 1974, stating that burnout is a psychological disorder characterized by a sustained response to persistent interpersonal stressors. Freudenberg enumerated the symptoms of burnout in 1975: which included depression, exhaustion, lack of interest in one's work, negative sentiments toward coworkers and one's job in general, a loss of passion and enthusiasm for one's work, a sense of demotivation and inability to accomplish goals, confusion, a quick reaction to anger, frustration, and a negative attitude (1). Maslach develop the concept of burnout into three basic dimensions (2). The first dimension is emotional exhaustion (EE): which is defined as feeling drained, overwhelmed, and unable to cope with daily responsibilities; the second dimension is depersonalization: which is a state of developing a detached or cynical (negative) attitude toward work, colleagues, and clients; and the third dimension is reduced personal accomplishment: which is a state of feeling ineffective, unproductive, and having a sense of failure (2, 3). Depersonalized individuals exhibit distant, caustic, and risky behavior toward their organization and the people with whom they engage, treating those they serve as objects rather than persons (3).

The World Health Organization (WHO) defines burnout as a syndrome resulting from "chronic workplace stress that has not been properly handled," and it is classed as an "occupational phenomenon" in the 11th revision of the International Classification of Diseases (ICD-11). Nonetheless, it is neither an illness nor a mental health condition (4). Stress that is temporary or tied to a specific purpose is unlikely to cause harm. However, if the stress is constant and accompanied by feelings of emptiness, apathy, and hopelessness, it may result in burnout. It is particularly prevalent among health providers due to the demanding nature of their work. health care providers who had working in a high-stress environment, such as healthcare workers, educators, and first responders, are more likely to be affected (5).

Burnout mainly does not have immediate manifestations but appears as a slow reaction of emotional breakdown caused by long-term stress exposure (6). Factors that contribute to burnout

syndrome include workplace factors like high workload, work experience, insufficient rewards, poor work-life balance, and poor satisfaction with the job, physical/verbal abuse, and worry of contracting an infection. Poor management, an unhealthy work environment, and a lack of resources were all classified as organizational factors, and socio-demographic factors associated with healthcare provider burnout were having children, being unmarried, being younger, being a female healthcare provider, and having a low monthly income (7),(8).

1.2. STATEMENT OF THE PROBLEM

Burnout is a frequent work-related problem, mainly impacting health care professionals such as nurses and other providers who had regularly participate in demanding and emotionally intensive encounters with patients in need of medical and psychological care. This illness, which is commonly caused by extended work-related stress, has been identified as a major concern in numerous health sectors globally. According to studies, the global burnout rate among nurses is 11.23%, with considerable regional differences (9). Sub-Saharan Africa has the highest frequency, with more than 66% of nurses feeling emotional tiredness, 60% experiencing depersonalization, and 49% suffering from diminished personal accomplishment (10). In contrast, Europe and Central Asia have the lowest burnout rates; however, this varies by nation. For example, England has a burnout rate of 42%, whereas Switzerland has a lower prevalence of 15% (9).

Beyond nursing, general practitioners face severe burnout, with reported rates of 37% for EE, 28% for DP, and 26% for dimensioned PA (10). Similarly, public health professionals exhibit troubling burnout rates, particularly during emergencies such as the COVID-19 pandemic, which is the prevalence among frontline workers increased to 42% (11).

Burnout is not limited to low- and middle-income countries; it is also a severe problem in developed nations. In the United States, 54 percent of physicians and 35 percent of hospital nurses experience burnout (12), while in the United Kingdom, burnout levels among doctors range from 31% to 54.3% for EE (13). Similar concerns have been observed among healthcare workers in Canada, Australia, Italy, and many other developed nations (14),(15). Burnout rates in the Arab health sector vary widely, with EE impacting 20 percent to 81 percent of professionals, DP affecting 9.2 percent to 80 percent, and decreased personal accomplishment ranging from

13.3 percent to 85.8 percent (16). Similarly, burnout rates among frontline health care workers in low- and middle-income nations vary greatly, with estimates ranging from 3.62 percent to 90.1%. The COVID-19 pandemic exacerbates the condition, raising prevalence rates to around 52% (17).

Burnout syndrome is most prevalent among health care personnel in Africa, although it remains an underappreciated problem. Studies show an alarming prevalence, particularly among nurses (18), with reports indicating that 69% of health care providers in Ghana and Kenya experienced burnout during the pandemic (19). Comparable data have surfaced from nations such as Togo, South Africa, Egypt, Tunisia, and Morocco, demonstrating the pervasiveness of the problem across the continent (20).

Different factors contributed to the development of burnout syndrome: excessive workload, long working hours, lack of autonomy, administrative burdens, and high emotional demands associated with patient care (15). Interpersonal difficulties, low staffing, poor working conditions, and exposure to biohazards add to the risk (21),(18). In Ethiopia, burnout rates among healthcare personnel range from 31.6% in Addis Ababa public hospitals to 65.8% in Mekelle private hospitals, greatly compromising service quality and provider well-being(22),(23).

Unchecked burnout can result in serious effects such as depression, addiction, and suicide ideation, as well as increased absenteeism, high turnover rates, poor job performance, and strained working relationships (24),(25). Furthermore, healthcare burnout has been connected to a variety of physical and psychological illnesses, such as cardiovascular disease, decreased coping strategies, and work-family conflicts. Despite the growing recognition of burnout among healthcare professionals, limited studies have been conducted on its impact within Neonatal Intensive Care Units (NICUs). Given the high-stress environment and emotionally demanding nature of NICU healthcare work, burnout levels are notably high, particularly in hospitals with larger patient admissions and increased technological integration (26),(27). Understanding the prevalence and contributing factors of burnout in NICUs is critical for developing focused strategies to reduce its impact. The purpose of this study is to investigate the magnitude and risk variables associated with burnout among healthcare providers working in NICUs of selected

Addis Abeba public hospitals. Identifying these factors will help to develop evidence-based solutions for reducing burnout and improving the general well-being of healthcare professionals.

1.3. SIGNIFICANCE OF THE STUDY

The findings of this study might be an insight for Addis Ababa public hospitals for better understanding on the magnitude and factors associated with healthcare provider burnout in NICUs.

It might also be used for the Addis Ababa administrative health bureau, program planner, and supporting stakeholders in planning strategies for preventive measures that will be used to promote better working conditions and support systems for healthcare providers.

It is also hoped that the result of this study provides insight to health care providers in the identification of factors associated with burnout.

Lastly, the result of this finding might be a baseline for other researchers to do further study to assess factors (determinants) of burnout with relatively reliable scientific methodology in NICU.

2. LITERATURE REVIEW

2.1. MAGNITUDE OF HEALTH CARE PROVIDER BURNOUT

Burnout among healthcare providers in NICUs is significant. The rate of burnout among NICU workers varies, but studies show that it is relatively significant. A study conducted in California reported an overall burnout prevalence were 26.7 ± 9.8 percent among 1934 health care providers in 41 NICUs (27). Another cross-sectional study conducted in China among 311 neonatal nurses working in NICU showed that 40.19 percent had burnout, 89.60 percent had mild burnout, and 10.40 percent had moderate burnout; however, no neonatal nurses had severe burnout (28). similar study conducted in Italy to investigate the prevalence of burnout among French NICU HCPs reported that around 60–65 percent of HCPs in NICUs experience burnout (29).

2.2. FACTORS ASSOCIATED WITH HEALTH CARE PROVIDER BURNOUT

2.2.1. socio-demographic related factor

Factors associated with healthcare provider burnout in NICUs vary with geographical location and economic status. Factors like age, gender, marital status, experience, and educational level were some socio-demographic factors associated with healthcare provider burnout in NICUs (7),(28),.

Age: A cross-sectional study among health professionals in Dire Dawa city's public hospitals found that age groups ≥ 40 and 30-39 years were risk factors for burnout syndrome (7).

Gender: Female healthcare providers are more likely to report burnout than males. This could be due to greater social and familial obligations. a study conducted in united states, shows that women healthcare providers report much higher levels of stress and burnout than men (30). A similar study conducted in Mekelle City to assess the magnitude and factors associated with burnout among 229 healthcare workers revealed that being female healthcare providers was associated with burnout (31).

Marital Status: Single healthcare professionals and those without children may confront distinct stressors compared to healthcare professionals who are married or have children. A study conducted in Taiwan to investigate the relationship of marriage and burnout among healthcare providers during the COVID-19 pandemic revealed that, being married was a protective factor for work-related burnout whereas an independent risk factor for provider burnout (32).

2.2.2. work-related factor

Work-related variables greatly contribute to professional burnout among NICU healthcare providers. Workload, working hours, number of patient admissions, nurse-physician relationship, job demand, and social support are all work-related characteristics that lead to burnout among healthcare provider (7),(28).

Long working hours: Extended shifts and lengthy working hours add to physical and emotional weariness, leading to burnout. A cross-sectional study conducted in Brazil among 241 nurses and physicians working in 17 public critical care units to measure burnout syndrome among healthcare workers found that longer working hours in intensive care units were associated with a diminished sense of personal success (33).

Relationship at work: Poor communication and coordination among colleagues might result in a stressful work environment. A cross-sectional study conducted in the Amhara region of Ethiopia to assess burnout and resilience at work among health professionals serving in tertiary hospitals revealed that participants who had a poor relationship at work had a higher mean score of EE than those who had a good relationship at work (34).

Year of experience: Years of work experience can significantly contribute to professional burnout. A cross-sectional study conducted in Dire Dawa city to investigate magnitude and factors related with healthcare provider burnout reveals that having 6-11 years of work experience was a factor linked with burnout among healthcare practitioners (7). A comparable study in Malaysia discovered that healthcare professionals with greater years of work experience were also connected with healthcare provider burnout (35).

Parenthood: Parenthood, or having children, has a substantial impact on health care provider burnout that had working in NICUs. Balancing the demands of a high-stress job with the

obligations of parenthood can result in increased stress and emotional depletion, contributing to burnout. Cross-sectional research conducted among 365 healthcare workers in Ghana's Accra Region found a positive correlation ($p < 0.001$) between motherhood and burnout (36).

Interest in own profession: Interest in one's job, or professional engagement, can play a crucial role in prevention of health care provider burnout. Healthcare professionals that feel passionate and involved in their work were more likely to experience job satisfaction and resilience, which can buffer against burnout. A cross-sectional research study among 251 healthcare workers at Dessie Comprehensive Specialized Hospital found that a lack of enthusiasm in their occupation was one of the factors associated with burnout syndrome (37).

Worry of contracting infection/illness: is linked to healthcare provider burnout that have working in NICUs. Concerns about personal health and safety, especially during periods of elevated infection risk (such as during the COVID-19 pandemic), can significantly contribute to stress and burnout. A cross-sectional study conducted in Tertiary Teaching Hospital of Jimma, South West Ethiopia among 403 healthcare providers to assess Burnout Status at Work revealed that fear about contracting infection or disease was one of the risk factors associated with burnout development (38).

Physical/verbal abuse: Burnout among healthcare providers working in the NICU is strongly linked to physical and verbal abuse. Healthcare providers who suffer from abuse may also feel unsupported and devalued, causing burnout. A cross-sectional study conducted in Jimma Tertiary Teaching Hospital shows that health care providers facing work-related physical/verbal aggression by patients and teammates were one of the contributing factors for burnout (38).

Job satisfaction: is one of important element in the relationship of burnout among healthcare providers working in the NICU. Low job satisfaction can lead to emotional exhaustion, depersonalization, and a lack of personal accomplishment, all of which contribute to burnout. A cross-sectional study conducted at Dessie Comprehensive Specialized Hospital among health professionals showed that health care practitioners who were unsatisfied with their jobs were substantially associated with burnout (37).

Working hours /week: A cross-sectional study conducted in Uganda to investigate the level of burnout among 550 healthcare workers revealed that the odds of burnout were higher among health care providers working more than 40 hours per week (39).

Sleep duration: A study of 300 healthcare professionals in Rioja, Peru, found that men and women who slept <7 hours during workdays and days off were more associated with burnout than those who slept ≥ 7 hours, respectively (40).

Perception of understaffing: High patient-to-staff ratios can lead to increased strain, stress, and emotional exhaustion, which contribute to burnout. When healthcare providers are in charge of too many patients, it can degrade the quality of care and raise the chance of errors, causing stress and burnout. A cross-sectional study conducted in Greece during the COVID-19 pandemic found that healthcare providers who perceived their workplace as understaffed were associated with health care provider burnt out due to understaffed may contribute to increased workload (41).

Income: Lower income levels can add to financial stress, which can worsen feelings of burnout. Healthcare providers with lesser compensation may feel unappreciated and overworked, resulting in emotional tiredness and poor job satisfaction. A cross-sectional study conducted in hospitals from different areas of Morocco among 396 healthcare workers shows that getting an insufficient salary was associated with burnout dimensions (42). A Dire Dawa municipal government survey of 508 health professionals found that monthly earnings of less than 10,000 Ethiopian Birr and between 10,000 and 15,000 Ethiopian Birr were associated with health care provider burnout (7).

2.2.3. Organizational related factor

Organizational factors associated with healthcare providers' burnout were like perception of professional recognition, resource availability, and lack of organizational support.

Lack of organizational support: In a study of 538 healthcare workers in America, stronger perceived organizational support was related with a lower risk of burnout (43). Another cross-sectional study of 548 healthcare professionals in Uganda found that healthcare providers who lack management support were significantly associated with healthcare provider burnout (39).

presence of work overload: A cross-sectional study conducted in a tertiary hospital in the Amhara region of northwest Ethiopia among 388 participants to investigate level of provider burnout and resilience in critical ward shows that perception of high workload was associated with DP and EE (34).

Shortage of staff: A facility-based cross-sectional study conducted among 216 midwives in the Amhara region to evaluate the prevalence and associated causes of burnout revealed that shortage of staff members was connected with developing healthcare professional burnout (44)

Most of the previous studies use a large sample size and systematic sampling technique, which provides reliable data. They employ advanced statistical methods to identify significant associations between burnout and different factors. And also many studies achieve high response rates, revealing that the findings are representative of the population. But limited studies were conducted specifically in NICU settings, since the populations are different and even the workloads in NICUs and other settings are not similar. As a result, the findings of this study fill a gap in the literature by revealing the extent and correlates related with burnout among NICU staff.

2.3. CONCEPTUAL FRAME WORK

Burnout is a condition in which someone becomes physically and emotionally exhausted after performing a challenging work for an extended period of time. Additionally, it is a syndrome of emotional weariness, depersonalization, and low personal accomplishment that has an impact on patient care, organizational outcomes, and individual life (7).

Organizational, socio-demographic, and work-related characteristics have been identified as being associated with burnout in several studies (7, 45).

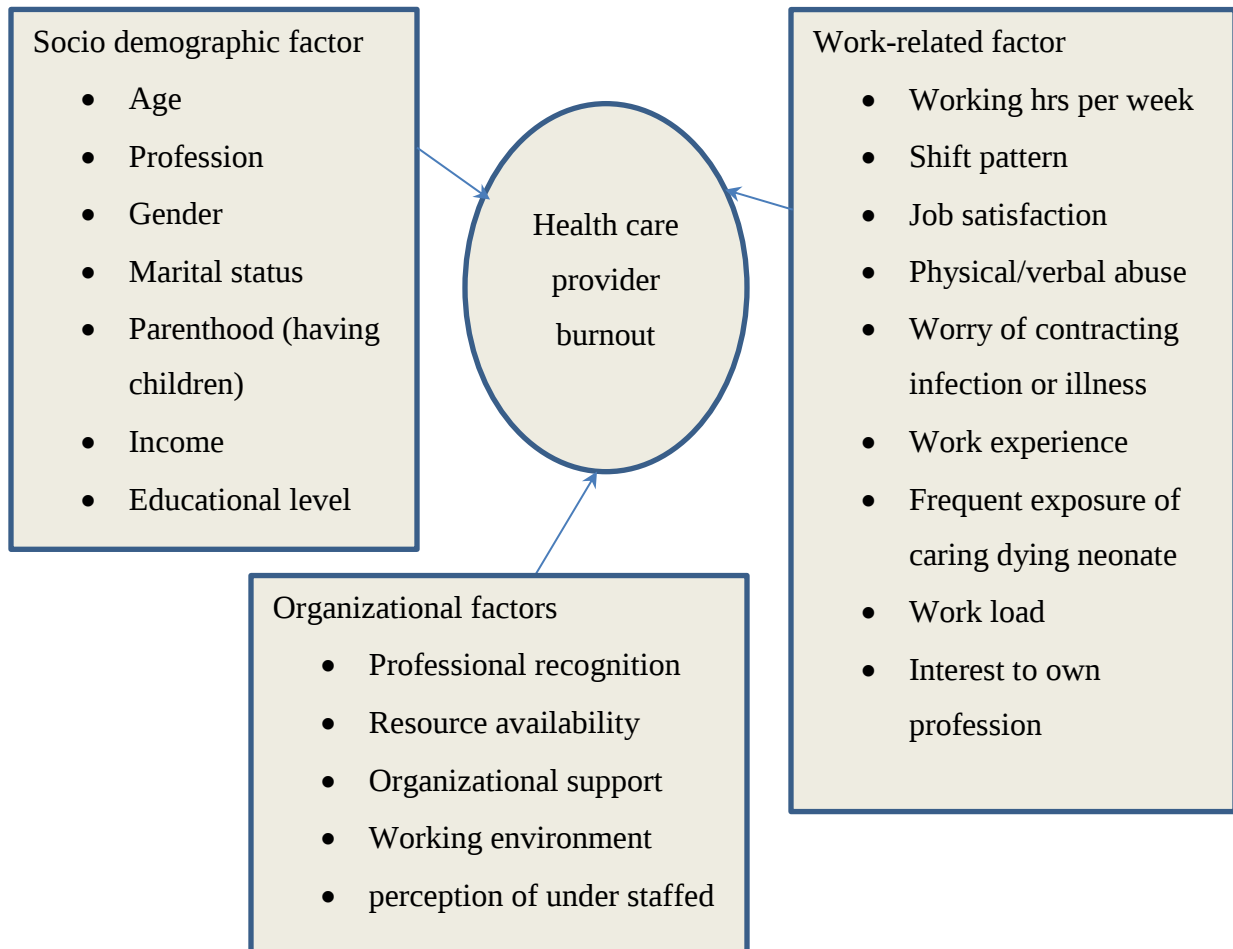


Figure 1: The conceptual framework demonstrates the relationship between healthcare professional burnout and its associated variables in selected public hospitals 2025.

Source; adapted from different literatures(7),(37),(39),(27).

3. OBJECTIVES

3.1. GENERAL OBJECTIVES

To investigate magnitude and factors associated with burnout among healthcare providers working in NICUs of selected Addis Ababa public hospitals, 2025.

3.2. SPECIFIC OBJECTIVES

To determine magnitude of burnout among healthcare providers working in NICUs of selected public hospitals

To investigate factors associated with burnout among healthcare providers working in NICUs of selected public hospitals

4. METHOD AND MATERIALS

4.1. STUDY AREA AND PERIOD

Addis Ababa has twelve government hospitals and the study was carried out in seven public hospitals: namely TASH, Menilik II Comprehensive Specialized Hospital, St. Peters Specialized Hospital, Zewditu Memorial Hospital, Gandhi Memorial Hospital, Yekatit 12 Medical College, and St. Paul's HMMC.

Tikur Anbessa Specialized Hospital (TASH) is one of the country's largest referral facilities. It serves as the principal teaching hospital for clinical and preclinical training in most specialties. It is also an institution that provides specialist therapeutic services to the entire countries that are not available in other public or private hospitals. The neonatal intensive care unit (NICU) was staffed by a senior neonatologist, two neonatologist fellows, nine pediatric residents, and 55 permanent staff nurses (46).

Emperor Haile Selassie was the 1st to build St. Paul's Hospital in 1969 in conjunction with the German Evangelical Church to provide medical care for underprivileged populations. St. Paul's HMMC is one of Ethiopia's premier medical schools and hospitals. Approximately 75 percent of patients receive free medical treatment. The newborn intensive care unit has over 56 permanent nurses, 2 senior neonatology sub-specialists, and over 9 pediatric residents (46). Menilik II Referral Hospital, named after Emperor Menilik II, was constructed in 1909 and is now one of Ethiopia's oldest modern hospitals. It was built in 1908 and began with only 30 beds. Currently, it is a tertiary care hospital with specialized provision, with over 800 beds and specializations such as cardiology, neurology, oncology, and others. It serves 15,000 patients daily and employs around 2,300 people. The hospital has its own Neonatal Intensive Care Unit (NICU), staffed with 25 nurses, GP=4, and one senior neonatologist working in NICUs.

Gandhi Memorial Hospital is a government hospital that specializes on maternal care. The hospital serves as a teaching center for Addis Ababa University gynecological and obstetrics students, as well as other undergraduate medical students. The hospital's NICU takes high-risk neonates delivered on-site, as well as referrals from other health facilities and home deliveries. The hospital averages 6,658 annual and 555 monthly NICU admissions. The NICU has a 32-bed

capacity and is staffed with two neonatologists, 34 nurses, eight general practitioners, and four pediatric residents, for a total of 48 healthcare personnel.

Yekatit 12 (Abebech Gobena) is one of Ethiopia's oldest hospitals and is supervised by the Addis Abeba Health Bureau. The hospital's NICU has a 36-bed capacity and admits 900 newborns annually. This NICU is staffed by two neonatologists, four neonatal nurse practitioners, and 32 nurses.

St. Peter's Specialized Hospital is a referral facility in Addis Ababa, Ethiopia. The hospital was established in 1953. It is overseen by the Ethiopian FMOH. It is one of Ethiopia's pediatric neurosurgery referral facilities and The NICU is manned by 28 health care providers.

Zewditu Memorial Hospital in central Addis Abeba is a well-known public hospital named after Empress Zewditu. The hospital is well-known for its HIV/AIDS services and has long been a pioneer in Ethiopian antiretroviral therapy (ART). Its Neonatal Intensive Care Unit (NICU) specializes in care for critically ill infants. It included one senior neonatologist, three general practitioners, and twenty neonatal nurse practitioners and nurses. The investigation took place between January and March of 2025G.C.

4.2. STUDY DESIGN

A cross-sectional study methodology was used to examine magnitude and risk factors for burnout among healthcare personnel working in the NICU of selected Addis Abeba public hospitals.

4.3. POPULATION

4.3.1. Source population

All healthcare providers working in NICUs of Addis Ababa public hospitals

4.3.2. Study population

Selected Healthcare providers of working TASH, Menelik II Comprehensive Specialized Hospital, Zewditu Memorial Hospital, Gandhi Memorial Hospital, Yekatit 12 Hospital, St. Peter's Specialized Hospital, and St. Paul's HMMC NICUs

4.4. ELIGIBILITY CRITERIA

4.4.1. Inclusion criteria

The study includes all healthcare providers working in the NICU for at least six months.

4.4.3. Exclusion criteria

Residents who were not in the NICUs during the data collection, healthcare providers on annual leave, and healthcare providers working in the NICU for less than 6 months were excluded from the study.

4.5. SAMPLE SIZE DETERMINATION

The study area (setting) had a total population of 291, making it difficult to obtain reliable and accurate data by calculating sample size in this population. To obtain reliable and adequate data, all health care providers working in the selected public hospitals were included in the study using the census method.

4.6. SAMPLING PROCEDURE AND SAMPLING TECHNIQUE

Seven of the twelve public hospitals in Addis Abeba were picked at random. TASH, Menilik II Comprehensive Specialized Hospital, St. Peter's Specialized Hospital, Gandhi Memorial Hospital, Yekatit 12 Hospital Medical College (Abebech Gobena Memorial Hospital), Zewditu Memorial Hospital, and St. Paul's HMMC were the hospitals chosen at random. The NICU department office reported that TASH had 64 health care providers, Menelik II Comprehensive Specialized Hospital had 30, St. Peter's Specialized Hospital had 28, Gandhi Memorial Hospital had 48, Yekatit 12 Hospital Medical College had 32, Zewditu Memorial Hospital had 24, and St. Paul's HMMC had 65. All healthcare provider lists obtained from each hospital were

documented, and data were gathered sequentially from all healthcare providers accessible during the data collection period using the list obtained from each NICU department head.

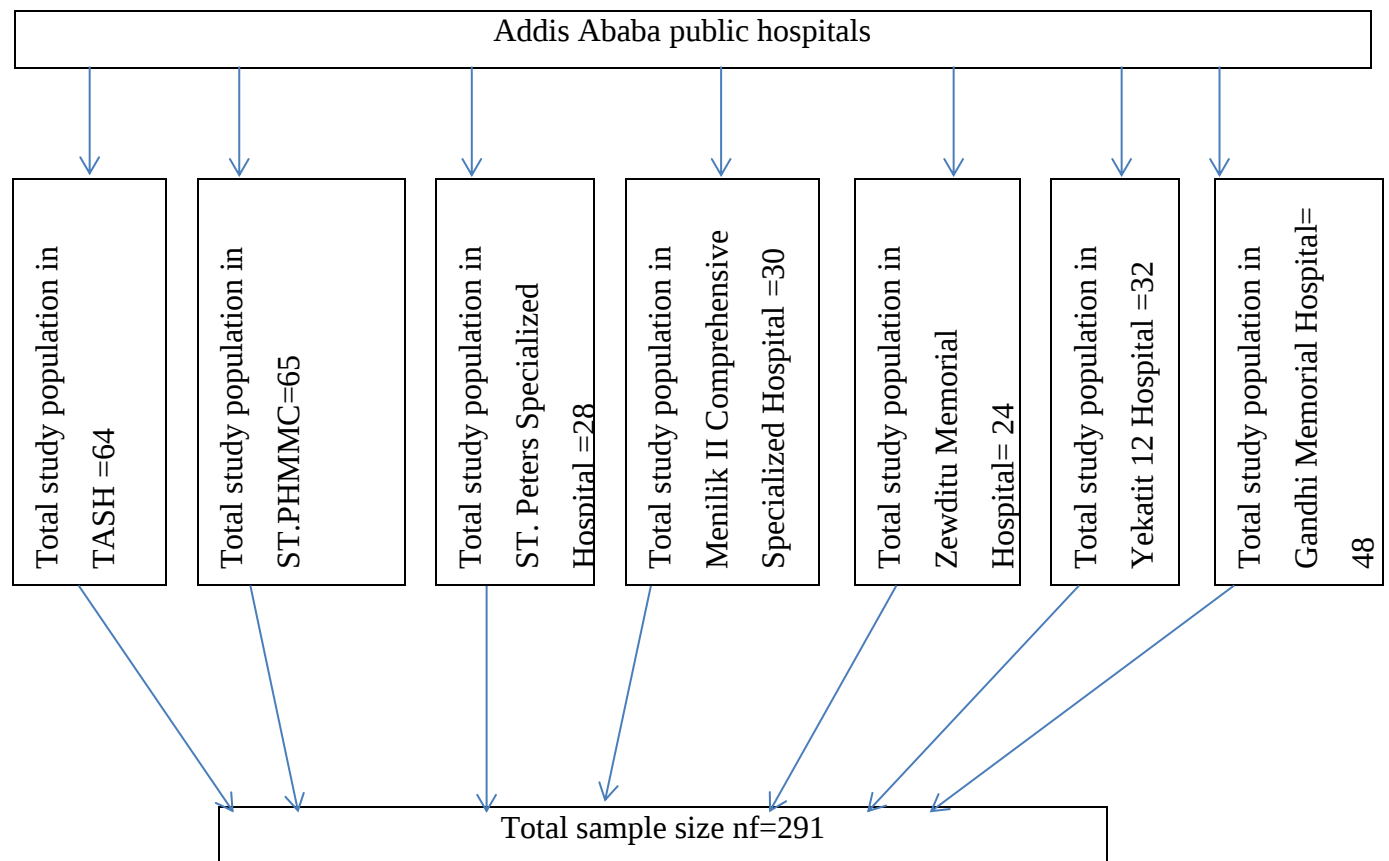


Figure 2: A schematic representation of the sampling strategy and technique for evaluating the extent and factors related with burnout among health care personnel working in the NICUs of selected Addis Abeba public hospitals in Ethiopia in 2025.

4.7. DATA COLLECTION METHODS

4.7.1. Data collection instrument

The data were collected by self-administered questionnaires via Kobo Toolbox, which was developed in English, and the instrument tool was adapted and modified based on a review of various literatures (47),(7),(45),(37). Burnout was explored using the Maslach Burnout Inventory-Human Service Survey (MBIHSS), which was widely used to assess burnout among healthcare personnel (47). The instrument was composed of 22 items regrouped into three

subscales: emotional weariness (9 items), depersonalization (5 things), and personal accomplishment (8 items) with a seven-point Likert scale (0 to 6), ranging from 0=never to 6=daily (47). The total scores for each dimension were added together and categorized as low, moderate, or high. The cut-off point scores for burnout among health care practitioners were emotional tiredness (≤ 16), moderate (17-26), and high (≥ 27), and personal accomplishment (≤ 31 , 32-38), and high (> 39). Depersonalization: mild (≤ 6), moderate (7-12), or strong (≥ 13) (7). Burnout among health care providers in the NICU was assessed by adding the total score of each component. High scores in emotional exhaustion (≥ 27) and depersonalization (≥ 13), as well as low scores in personal accomplishment (≤ 31), were termed burnout. It is important to note that the questions were adjusted to help the researcher meet the aims indicated below. Job satisfaction was measured using a 5-point Likert scale ranging from 1 (extremely unhappy) to 5 (very satisfied), with six criteria influencing job satisfaction. These elements include management style, employee relationships, remuneration, working environment, training opportunities, performance evaluation, and participation in decision-making (48). The tool comprises socio-demographic, work-related, and organizational factors linked to health care professional burnout. Job satisfaction is calculated by taking the mean value, with scores above the mean value indicating contentment and scores below the mean value indicating dissatisfaction. A questionnaire was prepared using the items mentioned above. The Cronbach's alpha coefficient for this questionnaire was 7.1 which are consistent.

4.7.2. Data collection procedure

Four BSc nurses collected the data, while two MSc nurses monitored it. The supervisor and data collectors received one-day training on the study's objective and significance. Addis Abeba College of Health Science wrote a letter to TASH, Menelik II Comprehensive Specialized Hospital, Yekatit 12 Hospital, Zewditu Memorial Hospital, Gandhi Memorial Hospital, St. Peter's Specialized Hospital, and St. Paul's HMMC requesting permission to do research. Specific departments received a letter from the management of TASH, Menelik II Comprehensive Specialized Hospital, Yekatit 12 Hospital, Zewditu Memorial Hospital, Gandhi Memorial Hospital, St. Peter's Specialized Hospital, and St. Paul's HMMC requesting interviews with selected healthcare providers. After identifying each selected participant and obtaining informed consent, data was collected over a three-month period utilizing the Kobo toolkit and

the designed questionnaire. It was held throughout the day and night to recruit individuals who could be assigned to the night shift, except on weekends. Throughout the data collection phase, the principal investigator and supervisor provided extensive monitoring to ensure that the data was comprehensive, accurate, and consistent. The principal investigator provided overall oversight.

4.8. STUDY VARIABLES

4.8.1. Dependent variables

Healthcare provider burnout

4.8.2. Independent variables

Socio-demographic factors: profession, gender, marital status, parenthood (having children), age, income, work experience, and educational status.

Work-related factors: Income, work-load, Sleep duration, working hours per week, Shift pattern, Job satisfaction, Physical/verbal abuse, frequent exposure of caring dying neonate, and worry of contracting infection or illness

Organizational factors: perception of professional recognition, resource availability, organizational support, working environment, and patient-to-staff ratio (understaffed working unit).

4.9. OPERATIONAL DEFINITIONS

Burnout: The standard's value is determined by the depersonalization, emotional weariness, and personal accomplishment subscales. The total scores for each dimension were combined and categorized as low, moderate, or high. The cut-off marks for health care professional burnout were determined by combining total scores for emotional exhaustion (≥ 27), depersonalization (≥ 13), and personal accomplishment (≤ 31) (7). So the score is high in EE and DP but low in PA, a subscale considered to be health care professional burnout.

Emotional exhaustion: refers to sentiments of overextension produced by one's job, with a score of 27 or more indicating high, 17-26 moderate, and ≤ 16 low (7).

Depersonalization (DP): is characterized as emotional apathy and dehumanization of those receiving services, care, therapy, or instruction. A score of 13 or more indicates high, 7-12 moderate, and ≤ 6 mild DP (7).

Personal achievement (PA): is a term used to describe feelings of job discontent, inefficiency, or underperformance. A score of ≤ 31 shows mild, 32-38 moderate, and ≥ 39 high PA (7).

Job satisfaction: by computing the mean score of job satisfaction among six variables impacting job satisfaction, score less than the mean value is deemed dissatisfied, and score above the mean value is considered satisfied (48).

4.10. DATA QUALITY CONTROL

To ensure data quality, 10% of the sample size of healthcare practitioners at ALERT General Hospital were examined for quality and dependability one week before data collection began, and the questionnaire's appropriateness was checked, with any unclear items being addressed. Prior to data collection, data collectors and supervisors received training on the study's purpose, confidentiality, and data extraction procedures. Every day, the principal investigator and supervisors evaluated the questionnaire for completeness and missing values. Prior to analysis, the data was cleaned using SPSS version 26.

4.11. DATA PROCESSING AND ANALYSIS

Data collected via Kobo Toolbox were exported to SPSS version 26. Before proceeding with the analysis, the exported data was coded and cleaned. The characteristics of research participants, including socio-demographic, occupational, and organizational aspects, were described using descriptive statistical analysis, such as simple frequency and percentage, and displayed as frequency tables and figures. A binary logistic regression model was used, and bivariate and multivariable logistic regression was utilized to investigate the association between independent and dependent variables. To control for confounders, variables having a P-value ≤ 0.25 in the bivariate analysis would be included in the final multivariable analysis. A p-value < 0.05 was judged statistically significant. The study's final results were given as a P-value, an AOR, and a 95% confidence interval.

4.12. ETHICAL CONSIDERATION

Addis Abeba University's College of Health Science Institutional Review Board (IRB) provided ethical clearance. The Addis Abeba Health Bureau was contacted for authorization, and official letters of permission were sent to each institution. Each study participant provided informed, voluntary, written, and signed consent after being clearly informed about the study's purpose, risks, and benefits.

4.13. DISSEMINATION PLAN

The study's final results were submitted to Addis Abeba University's School of Nursing and Midwifery. A copy of the findings would also be given to the Addis Abeba Health Bureau, TASH, St. Paul's HMMC, Yekatit 12 Hospital, Gandhi Memorial Hospital, Zewditu Memorial Hospital, and Saint Peter Specialized Hospital. Finally, the study's results were submitted to international journals for possible publication.

5. RESULTS

5.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANT

A total of 291 healthcare professionals were contacted; 271 of them (93.1%) responded. During the analysis of socio-demographic characteristics of the participant majority of the participants, 151 (55.7%) were females, with 142 (52.4%) married, followed by 125 (46.1%) single, and 111 (41%) of them have one or more children. The majority of the participants, 203 (74.9%), fell in the age group of <25. In terms of education, 200 (73.8%) had degrees, and 209 (77.9%) were nurses by profession.

Table 1: Socio-demographic characteristics of health care providers, Ethiopia, 2025.

Variables	Respondent	Frequency	Percentage
Age	<25	203	74.9%
	25-35	65	24%
	>35	3	1.1%
Sex	Female	151	55.7%
	Male	120	44.3%
Marital status	Single	125	46.1%
	Married	142	52.4%
	Divorced	3	1.1%
	Widowed	1	0.1%
Having children	Yes	111	41%
	No	160	59%
Number of children	<=2	87	32.1%

	>2	24	8.9%
Educational level	Diploma	3	1.1%
	Degree	200	73.8%
	Masters	58	21.4%
	Above	10	3.7%
Profession	Nurse	209	77.1%
	Midwife	10	3.7%
	GP	12	4.4%
	Pediatric resident	32	11.8%
	Senior neonatologist	8	3%
Year of experience	< 5 years	172	63.5%
	5-10	76	28%
	>10	23	8.5%
Income	<=10000	186	68.6%
	> 10000	85	31.4%

5.2. WORK RELATED FACTORS

The analysis of work-related factors affecting health care provider burnout working in the neonatal intensive care unit showed that 165 (60.9%) of the participants faced frequent exposure to caring for dying neonates (palliative care), 92 (33.9%) of the participants slept ≤ 4 hours during duty time, and 123 (45.4%) of the participants reported working an average of > 62 hours a week. 209 (77.1%) of healthcare providers have perception of being understaffed in the working unit but regards to interest to their own profession More than 3/4 of 208 (76.8%) of

them were interested in owning a profession. nearly half of them, 135 (49.8%), were facing history of work related physical/verbal violence, and majority of the violence 107(50.7%) were from attendants in the source. Two hundred ten (77.5%) of the participants had worried about contracting an infection/illness, two hundred seventeen (80.1%) had perceived work overload, and one hundred fifty-four (56.4%) of the participants were dissatisfied regarding job satisfaction. One hundred twenty-one (44.6%) of the participants had an intention to leave their work for the upcoming 12 months.

Table 2: Work related factors of participant in selected public hospitals, Ethiopia, 2025.

Variables	Respondent	Frequency	Percentage
Slept hours per day	< 4hours	92	33.9%
	>=4hours	179	66.1%
Working hours per week	<= 62hours	148	54.6%
	>62hours	123	45.4%
Exposure of a dying neonate	No	106	39.1%
	Yes	165	60.9%
perception of Understaffed	No	62	22.9%
	Yes	209	77.1%
Interest to profession	No	63	23.2%
	Yes	208	86.8%
Physical/verbal violence	No	136	50.2%
	Yes	135	49.8%
Fear of contracting	No	61	22.5%

infection	Yes	210	77.5%
Workload	No	54	19.9%
	Yes	217	80.1%
Job satisfaction	Dissatisfied	154	56.8%
	Satisfied	117	43.2%
Intention to leave work	No	150	55.4%
	Yes	121	44.6%

5.3. ORGANIZATIONAL RELATED FACTORS

The analysis of organizational-related factors affecting burnout showed that 154 (56.8%) perceived their profession to be recognized by a concerned body, 72 (26.2%) of the participants perceived the availability of resources in their organization, 160 (59%) of them perceived job supervision by a concerned body, 144 (53.1%) perceived their working area supported by leaders and organizations, and 85 (31.4%) of them perceived their working area to be suitable.

Table 3 Organizational related factors of participants in selected public hospitals, Ethiopia, 2025.

Variables	Respondent	Frequency	Percentage
Professional recognition	No	117	43.2%
	Yes	154	56.8%
Resources available	No	199	73.4%
	Yes	72	26.6%
Job supervision	No	111	41%

	Yes	160	59%
Working area supported	No	127	46.9%
	Yes	144	53.1%
Working area Suitable	No	186	68.6%
	Yes	85	31.4%

5.4. PREVALENCE OF HEALTH CARE PROVIDER BURNOUT

The MBI-HSS questionnaire is used to assess burnout among healthcare practitioners. It consists of 22 items that meet the criteria for high EE (≥ 27), high DP (≥ 13), and low PA (≤ 31). Of the 271 health care providers, 96 (35.4%) suffer from professional burnout. Among these respondents, 150 (55.4%), 130 (48%), and 101 (37.3%) of NICU health care providers scored high on the EE and DP subscales and low on the PA subscales, respectively, implying that a considerable proportion of NICU health care workers experience burnout.

Table 4: Description of MBI-HSS sub-scales in selected public hospitals, Ethiopia, 2025.

Variables	Low (%)	Moderate (%)	High (%)
Emotional exhaustion (EE)	9 (3.3%)	112 (41.3%)	150 (55.4%)
Depersonalization (DP)	15 (5.5%)	126 (46.5%)	130 (48%)
Personal accomplishment (PA)	101 (37.3%)	65 (24%)	105 (38.7%)

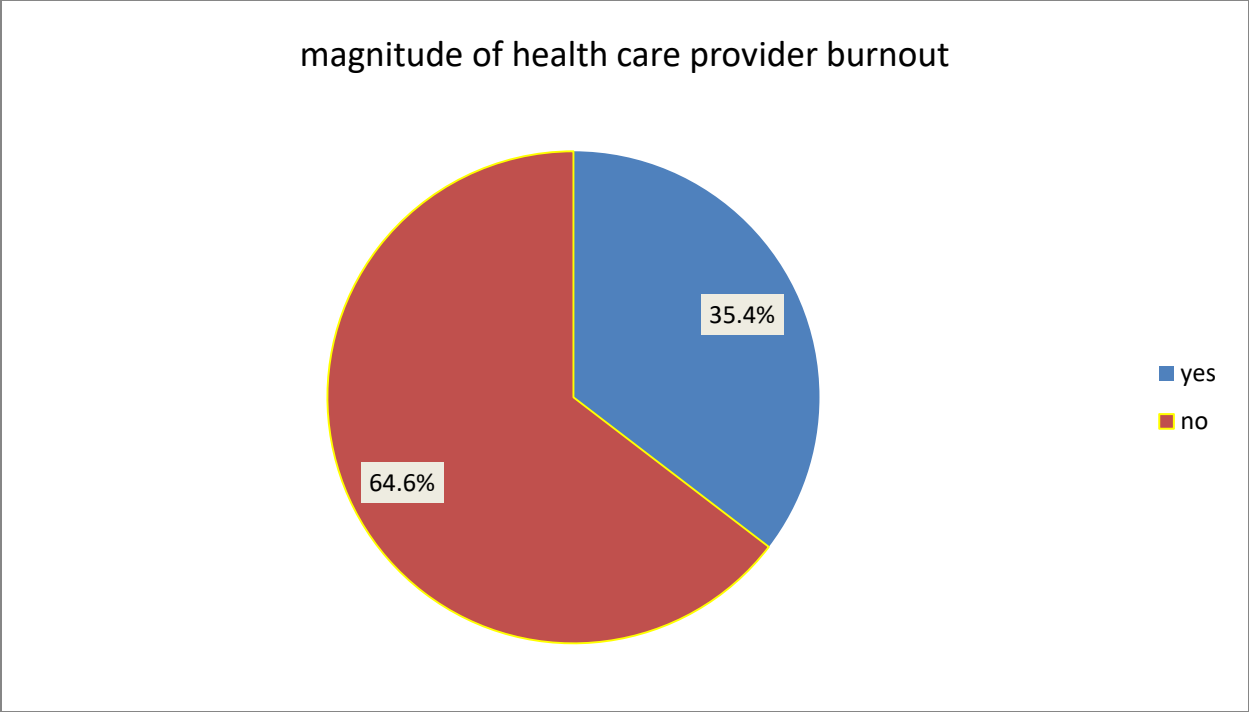


Figure 3: magnitude of healthcare provider burnout in selected public hospitals, Ethiopia, 2025.

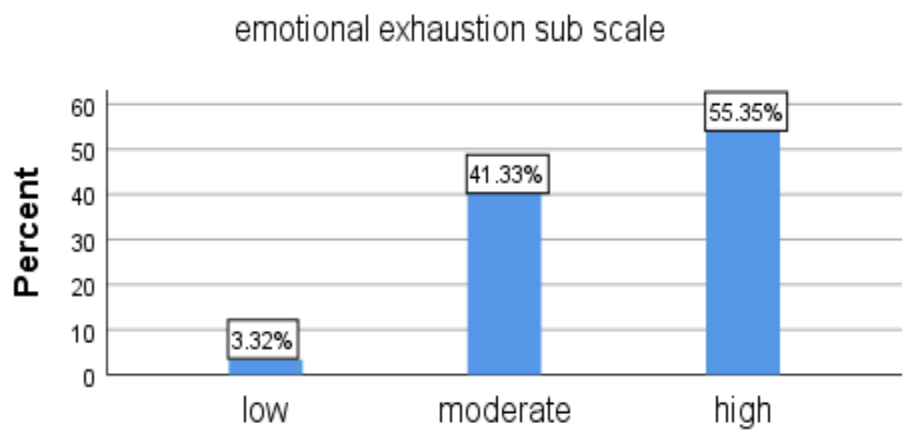


Figure 4: Emotional Exhaustion sub scale in selected public hospitals, Ethiopia, 2025.

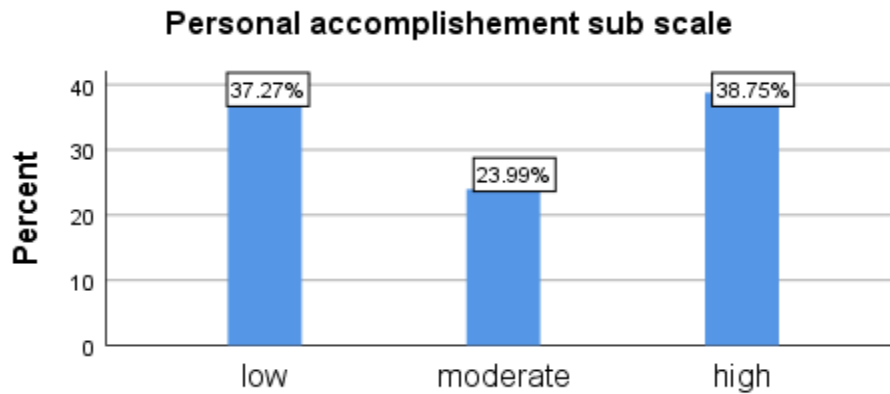


Figure 5: Personal Accomplishment sub-scale in selected public hospitals, Ethiopia, 2025.

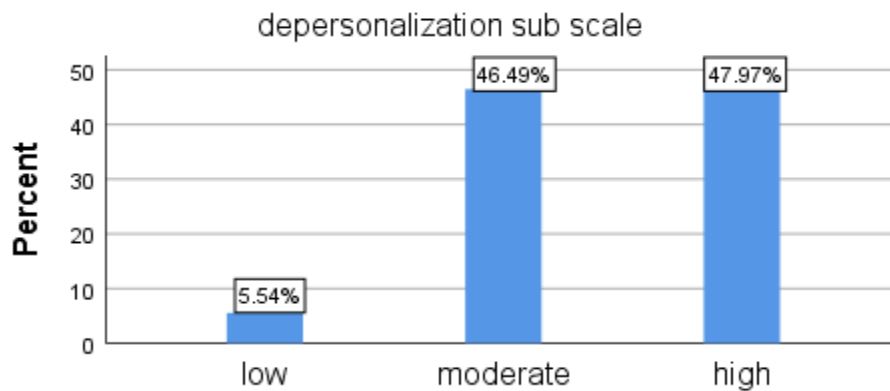


Figure 6: Depersonalization sub-scale in selected public hospitals, Ethiopia, 2025.

5.5 ASSOCIATION OF HEALTH CARE PROVIDER BURNOUT

To get variables moderately associated with healthcare provider burnout, bivariate logistic regression was used. Among those healthcare providers, monthly income, fear of risk of contracting infection, interest in the profession, physical/verbal violence, and frequent exposure to caring for dying neonates, average working hours per week, sleep duration, job satisfaction,

and workload were moderately associated with healthcare provider burnout in bivariate logistic regression.

Variables associated with dependent variables in bivariate logistic regression were incorporated in multivariate logistic regression models. After controlling for potentially confounding variables with multiple logistic regression, health care providers' monthly income, average working hours per week, sleep duration, exposure to caring for dying neonates, interest in the profession, job satisfaction, and work-related physical/verbal violence were found to be significantly associated with burnout.

Health care providers working more than 62 hours were 4.436 times [AOR=4.436; 95% CI: (2.015, 9.767), p-value 0.000] more likely to be burned out than those working less than 62 hours per week. Similarly health care providers whose monthly income less than 10,000ETB per month were 3.133 times [AOR=3.133; 95%CI: (1.346, 7.296) P-value 0.008] more likely to burnout than those who earns greater than 10000ETB per month.

Health care providers who slept less than 4 hrs per day during duty time were 10.98 times [AOR=10.98; 95%CI: (4.8, 25.118), p-value 0.000] more likely to be burnt out than their counterparts. Similarly, healthcare providers facing frequent exposure to end of life care were 4.424 times [AOR=4.424; 95%CI: (1.713, 11.424), P-value 0.002]. And health care providers who had no interest in their own profession were 67.5% times [AOR=0.325; 95%CI: (0.121, 0.87), p-value 0.025] more likely not to report burnout than those who had interested own profession.

Health care providers that were dissatisfied with their job were 3.882 [AOR=3.882; 95%CI: (1.69, 8.915), P-value 0.001] times more likely to burn out than their counterparts. Finally facing work related physical/verbal violence were 84.4% times [AOR=0.156; 95% CI: (0.065, 0.373) P-value 0.000] more likely not to report burnout than those who had faced frequent work-related physical/verbal violence.

Table 5: Factors affected burnout among health care providers in selected public hospitals, Ethiopia, 2025.

Variables	Health care provider burnout		Bivariate logistic regression	Multivariate logistic regression	
	Yes (%)	No (%)	COR (95% CI)	AOR (95% CI)	P-v
Income					
>10000	17(6.3%)	87(32.1%)	1.00	1.00	
<=10000	79(29.2%)	88(32.5%)	4.59[2.52-8.39]	3.13[1.35-7.3]	0.008
Work load					
No	8(3%)	46(17%)	1.00	1.00	
Yes	88(32.5%)	129(47.6%)	3.99[1.77-8.71]	0.51[0.14-1.87]	0.308
Risk of infection					
No	11(4.1%)	50(18.5%)	1.00	1.00	
Yes	85(31.4%)	125(46.1%)	3.1[1.52-6.28]	0.87[0.28-2.66]	0.800
Slept hour per day					
>=4hrs	33(12.2%)	146(53.9%)	1.00	1.00	
<4hrs	63(23.2%)	29(10.7%)	9.61[5.38-17.2]	11[4.8-25.1]	0.000
Work related violence					

No	62(22.9%)	74(27.3%)	1.00	1.00	
Yes	34(12.5%)	101(37.3%)	0.4[0.24-0.67]	0.16[0.1-0.37]	0.000
interest to profession					
Yes	82(30.3%)	126(46.5%)	1.00	1.00	
No	14(5.2%)	49(18.1%)	0.44[0.23-0.85]	0.33[0.12-0.87]	0.025
Perceive Understaffed					
No	26(9.6%)	36(13.3%)	1.00	1.00	
Yes	70(25.8%)	139(51.3%)	0.7[0.39-1.25]	1.23[0.5-31]	0.654
caring dying neonate					
No	12(4.4%)	94(34.7%)	1.00	1.00	
Yes	84(31%)	81(29.9%)	8.1[4.14-15.9]	4.42[1.7-11.4]	0.002
Job satisfaction					
Satisfied	17(6.3%)	100(36.9%)	1.00	1.00	
Dissatisfied	79(29.2%)	75(27.7%)	6.2[3.39-11.33]	3.88[1.69-8.9]	0.001
Recognize profession					
No	35(12.9%)	82(30.3%)	1.00	1.00	
Yes	61(22.5%)	93(34.3%)	1.54[0.92-2.56]	1.13[0.48-2.69]	0.77
Resource Availability					
No	64(23.6%)	135(49.8%)	1.00	1.00	
Yes	32(11.8%)	40(14.8%)	1.69[0.97-2.93]	0.6[0.25-1.48]	0.271

Supported work envt					
No	59(21.8%)	127(46.9%)	1.00	1.00	
Yes	37(13.7%)	48(17.7%)	1.66[0.98-2.81]	0.97[0.4-2.42]	0.942
Working hrs/ per week					
<=62hrs	29(10.7%)	119(43.9%)	1.00	1.00	
>62hrs	67(24.7%)	56(20.7%)	4.91[2.86-8.42]	4.44[2.02-9.7]	0.000

6. DISCUSSION

6.1. MAGNITUDE OF HEALTH CARE PROVIDER BURNOUT

The finding shows that, 35.4% of health care providers working in the NICU of selected Addis Ababa public hospitals had experienced professional burnout. The results of this study are in congruent with a cross sectional study conducted in southwest Ethiopia (34%); the consistency of the finding might be due to similarity in economic level, geographical area, method, tools employed, and approximately approximate sample size. Another study conducted in China among NICU nurses shows that 40.19%; The likelihood of consistency might be due to the similarities in study population, which is conducted in the NICU setting, and tools used to collect data might contribute to the consistency of the finding (28, 49).

whereas, our finding is lower than a study conducted on healthcare providers working in French NICUs, which is 60-65%, and nurses working in Jeddah's King Abdul-Aziz Medical City of National Guard Health Affairs, which is 44.8% (50),(29). The possible variation might be attributed to the electronic health record system: this may frequently need considerable data entry, leading to increased workload and dissatisfaction; this leads to provider spend more time on documentation than on patient care, which may contribute to stress and disconnect from, EE all this contribute for the development of burnout. Another possible explanation for variation is that in developed countries, newborns with a gestational age greater than 20 weeks and greater than 500 grams are frequently admitted to the NICU, whereas in our countries (≥ 1000 grams and ≥ 28 weeks gestational age): providers may care for extremely premature infants requiring advanced interventions and long-term intensive care, longer NICU stays, and advanced monitoring, all of which adds extra workload, stress, and job dissatisfaction. Another explanation could be due to greater technology integration, which involves ongoing adaptation to new medical technologies and digital tools, which can be overwhelming and necessitate continuous learning and adjustment. Similar studies conducted in Dire Dawa city public hospitals among health professionals (54.1 percent) and nurses in Kenya (47.1 percent) were also higher than our finding. This difference could be due to sample size and population difference in Kenya and Dire Dawa, which was served with a sample size of 68 and 508 health care providers, respectively, in nursing, whereas our study was assessed among health care providers working in NICU (7),(51).

The result of this study is notably higher than the studies conducted in different countries, such as research conducted in California, which is 26.7 ± 9.8 percent; general practitioners in Hubei, China, which is 2.46 percent; intensive care unit health professionals in Brazil, which is 0.41 percent; 15.1 percent of health professionals in Dessie Comprehensive Specialized Hospital; and 13.7 percent in Gondar University Hospital (52),(33),(53),(37),(27). The possible variation may be attributed to health professionals in our study facing specific challenges such as working with limited resources, high workloads, and increased emotional strain. ICU settings in Brazil and China frequently have excellent health-care infrastructure, which may provide better working conditions and lower the risk of burnout. Study population differences in China are conducted in general practitioner, and among healthcare providers working in different ward (unit) at university of Gondar and Dessie Comprehensive Specialized Hospital whereas; our study was confined to NICU which is the demanding nature of working in this unit. Working in NICU setting needs unique and intensive care and a high workload, all this may contribute to increasing the chance of burnout.

6.2. INDEPENDENT VARIABLES ASSOCIATED WITH BURNOUT

Different independent variables associated with burnout syndrome in this study were identified. Those health care providers who have average working hours greater than 62 per week were highly associated with (p-value 0.000) burnout compared to their counterparts. And also the ones who slept less than 4 hours per day during duty time were highly associated with (p-value 0.000) burnout compared to those who slept longer than 4 hours per day. The finding is supported by a cross-sectional study conducted among health professionals in Rioja, Peru, and Brazil (40),(33) respectively.

Working in the NICU for more than 62 hours per week are at significantly higher risk of burnout due to the intensive demand of their work. Long working hours lead to chronic weariness; diminish the ability to focus and make key decisions; continual exposure to parental distress and ethical dilemmas might lead to emotional exhaustion. Working longer hours each week offers little time for personal life, recreation, and social connection; lack of all this leads to melancholy, anxiety, and emotional detachment, which leads to a significant likelihood of provider burnout. NICU providers already face considerable emotional stress because to the vulnerable nature of

the baby; whereas, lack of sleep exacerbates their emotional burden. Less than 4 hours of sleep per day hinders critical thinking, problem solving, and memory recall, affecting cognitive function and increasing errors. Sleep deprivation accelerates burnout by decreasing resilience, increasing stress sensitivity, and compromising coping strategies.

Similarly, those who earn a monthly income of less than 10,000 ETB per month were highly associated with burnout (P-value 0.008). The finding is supported by a cross-sectional study conducted in different hospitals of Morocco among ICU and anesthesiologist professionals, Dire Dawa city administration public hospitals (42),(7). Earning a low monthly income may require working longer hours or multiple jobs, leaving little time for rest and personal life. Lack of personal time can lead to chronic fatigue, emotional detachment, and decreased motivation. Again, a low salary may lead to financial insecurity, making it difficult to meet personal and family needs, and those who earn a low salary may experience decreased job satisfaction when compensation does not match the workload and emotional demands of NICU care.

Another independent variable associated with burnout was constant exposure to end-of-life care; those who faced frequent exposure to caring for dying neonates were highly associated with (P-value 0.002) professional burnout. Our finding shows that there is a significant association between exposure to end-of-life care and provider burnout. Continuous exposure to end-of-life care and death generates moral discomfort, grief, emotional tiredness, and compassion fatigue in caregivers. Pressure to save vulnerable babies while managing family expectations causes high-stakes stress, and uncertainties about patient outcomes can contribute to chronic worry and EE. Repeated exposure to loss and suffering might lead to feelings of helplessness and decreased job satisfaction (54).

Job dissatisfaction is one of the variables most frequently encountered problems working as a health care provider. Those who are dissatisfied with their job are at a significantly high risk of burnout due to the emotional, psychological, and professional challenges they face. The odds of the occurrence of health care provider burnout among the dissatisfied were 3.9 times (p-value 0.001) higher than those who were satisfied. Burnout and job satisfaction were inverse relationships; those who were satisfied with their job had a lower chance of burnout. The finding is supported by a cross-sectional study conducted in Dessie Comprehensive Specialized Hospital among health professionals (37). NICU personnel work with high-risk patients, such as

premature and critically ill infants, who require extensive emotional involvement. Job dissatisfaction can raise stress levels, making it more difficult to deal with the emotional demands of newborn care. Providers dissatisfied with their job may feel disconnected from their profession, resulting in diminished engagement and a decreased sense of compassion for patients. This lack of motivation can result in poor job performance, dissatisfaction, and emotional tiredness.

Health care providers who had no interest in their own profession were almost 67.5% times more likely (p-value 0.025) not to report burnout than those who had interest in their own profession. The finding is in contrast with a cross-sectional study conducted among healthcare professionals in Dessie Comprehensive Specialized Hospital (37). Providers who are less emotionally committed to their work may experience less emotional weariness than highly passionate experts; they may not internalize patient outcomes, which reduce stress levels. Passionate health care professionals frequently experience compassion fatigue, which leads to emotional tiredness, while others with less emotional commitment may maintain emotional stability, averting burnout. In addition, providers who perceive their profession as an obligation rather than a calling may prioritize personal time. They may make clear boundaries between work and personal life to minimize burnout and reduce stress (55).

Finally, health care providers who had faced work-related physical/verbal violence were almost 84.4% more (P-value 0.000) likely not to report burn out. This finding is in contrast with a cross-sectional study conducted in Jimma teaching hospitals among healthcare professionals (38). Providers exposed to workplace violence may build better psychological resilience, helping them to more effectively manage stress. Again, some individuals may use adaptive coping methods such as emotional separation and professional distancing, all of which lower the likelihood of burnout. NICU teams experiencing high-stress environments may develop strong peer support networks, helping each other to cope with challenges.

7. STRENGTH AND LIMITATION OF THE STUDY

7.1. STRENGTH

This study attempted to analyze health care provider burnout in a specific unit within a NICU, and it is the only study in our country to do so.

7.2. LIMITATION OF THE STUDY

The study used a cross-sectional study design, which can only reflect a healthcare provider's experience at the time of evaluation, and no causal relationship can be established between burnout and its predictors.

Another disadvantage is that this study only included health care professionals who worked in public neonatal intensive care units. The magnitude of burnout may differ from this study, which does not reflect the experiences of health care personnel working in private NICUS.

8. CONCLUSION AND RECOMMENDATION

8.1. CONCLUSION

The study's findings show that a large proportion of health care personnel are burned out as a result of their work. More than one-third of the study participants experience work-related burnout.

Job dissatisfaction, a lack of interest in one's career, frequent physical or verbal abuse at work, earning less than 10,000 ETB, longer workdays, sleeping fewer than 4 hours per day while on duty, and frequent exposure to caring for a dying neonate were all found to be statistically significant predictors of burnout.

8.2. RECOMMENDATION

According to the findings of this research, a large proportion of healthcare providers experienced professional burnout, prompting the author to make the following recommendations:

- Hospital administrative systems should develop grief counseling services for NICU providers dealing with frequent neonatal death.
- Hospital administrative systems should establish mandatory break policies during longer shifts and provide dedicated rest areas within the NICU.
- Addis Ababa health bureau and hospital administrators should introduce burnout prevention strategies as part of hospital policy.
- The organization should conduct a regular assessment to identify the cause of job dissatisfaction, should offer a career development program, and should strengthen the mentorship program to improve engagement and motivation.
- The hospital should establish mental health support programs to enhance motivation.
- Health care providers should develop peer support groups where professionals can discuss challenges and solutions.
- The health bureau administrator should establish a welfare program including health insurance and housing benefits and introduce financial incentives like appropriate hazard allowance.

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8. ANNEXES

8.1. ANNEX I INFORMATION SHEET

Hospital administration information sheet and informed voluntary consent form.

My name is _____. I am a data collector for the study being conducted in this institution by principal investigator Dersolign Berihun, who is pursuing a master's degree at Addis Ababa University College of Health Science School of Nursing and Midwifery. The study's title is "Prevalence and Factors Associated with Burnout among Health Care Providers Working in NICUs." I gladly beg your attention so that I can explain the study and your institution's selection as a study participant.

Title of the study: magnitude and Factors Associated with Burnout among Healthcare Providers Working in NICU.

Purpose of the study: The primary goal of this research is to complete a thesis as part of the principal investigator's master's degree program in Maternity and Neonatal Nursing requirements. Furthermore, the study's findings will be used as evidence and input for developing burnout prevention and coping measures for healthcare providers.

Procedure and duration: Data were collected using the Kobo toolbox from healthcare providers who worked and practiced in those hospitals between January and March 2024/25,

using a prepared questionnaire for the inquiry. The data collection process from each participant will take approximately 30 minutes.

Risks and benefits: Participation in this study requires only a few minutes to retrieve data. Participation in this study would not result in direct pay. However, the findings of this study may be useful for local health planners.

Confidentiality: The information obtained from participants will be kept totally confidential. There will be no information that explicitly identifies the participant's records, and the study's conclusions will be general for the study population rather than particular to individual people. The questionnaire will use codes to identify responses, but no names or other personal information will be gathered.

Rights: If you volunteer for the hospital, you will be part of this study. You have the authority to authorize or deny this study in your institution. If you observe any misbehavior during data collection, you have the right to terminate the study.

Contact address: If you have any queries about the study or its protocols, please contact the principal investigator.

Principal investigator: Dersolign Berihun, e-mail dersolgnberihun@gmail.com

Mobile phone: +251-936691726.

8.2. ANNEX II INFORMED VOLUNTARY CONSENT:

A semi-structured questionnaire was prepared to explore the magnitude and factors associated with health care provider burnout in the neonatal intensive care unit of selected Addis Ababa public hospitals.

Dear

Hello, my name is Dersolign Berihun. I'm a master's student in neonatal nursing at Addis Ababa University College of Health Sciences. I'm interested in determining the magnitude and factors that contribute to health care provider burnout in the NICUs of selected Addis Ababa public

hospitals. This semi-structured questionnaire was created for academic reasons and approved by Addis Abeba University's College of Health Sciences, School of Nursing and Midwifery, as part of a master's degree in neonatal nursing. I hope you help me by answering these questions. Nobody will have access to your answers. All information you provide will be kept private. Anyone who is unwilling to engage in the study will be able to withdraw at any point during the procedure. Confidentiality and privacy are respected. As a result, I need your candid and real reaction. The study's findings would presumably provide valuable information for policy and intervention efforts.

Would you be willing to participate in this study?

1. Yes 2. No

If yes, proceed to the next page.

If not, please stop here.

8.3. ANNEX III: ENGLISH VERSION QUESTIONNAIRE

Checklist id No _____

Instructions

1. Fill the space provided in the questionnaires'
2. Choose from given alternatives

Part I socio-demographic factors:			
s.no	Questions	Answer/choices for response	Skip
101	What is your Age	_____in years	
102	What is your Gender	1. male 2. female	
103	What is your Marital status	1. married 2. single 3. divorced	

		4. widowed	
104	What is your Educational status(level)	1. diploma 2. degree 3. masters 4. above	
105	What is your Profession	1. Nurse 2. Midwife 3. General Practitioner 4. pediatric resident 5. Senior Neonatologist	
106	Do you have a children	1. yes 2. no	If no skip for Qno107
107	How many children do you have	_____in numbers	
108	What is your Monthly income	_____In Ethiopian birr	
Part II work related factor			
201	Your Work experience	_____In years	
202	do you have a plan to leave current work within the next 12 month	1. yes 2. no	
203	Do you think Presence of work overload in current working area	1. yes 2. no	
204	Do you fear the risk of contracting infections at work	1. yes 2. no	
205	For how long you Sleep per day during duty shift	_____in hours	
206	Do you face Physical/verbal violence in working area	1. yes 2. no	
207	Are you interested to own profession	1. yes no	
208	Do you think understaffed in our working area(unit)	1. yes 2. no	

209	Do you face frequent exposure of caring dying neonate	1. yes 2. no	If no skip for Q no 213
Job satisfaction assessment			
210	What is your satisfaction level related to Management system in working area(unit)	1. very dissatisfied 2. dissatisfied 3. neutral 4. satisfied 5. very satisfied	
211	What is your satisfaction level related to Salary	6. very dissatisfied 7. dissatisfied 8. neutral 9. satisfied 10. very satisfied	
212	What is your satisfaction level related to Staff relationship in working unit	11. very dissatisfied 12. dissatisfied 13. neutral 14. satisfied 15. very satisfied	
213	What is your satisfaction level related to Working environment	16. very dissatisfied 17. dissatisfied 18. neutral 19. satisfied 20. very satisfied	
214	What is your satisfaction level related to Training opportunities in working area(unit)	21. very dissatisfied 22. dissatisfied 23. neutral 24. satisfied 25. very satisfied	
215	What is your satisfaction level related to Performance evaluation in working area(unit)	26. very dissatisfied 27. dissatisfied 28. neutral	

		29. satisfied 30. very satisfied	
216	What is your satisfaction level related to Participate decision making in working area(unit)	31. very dissatisfied 32. dissatisfied 33. neutral 34. satisfied 35. very satisfied	
Part III organizational related factor			
301	Do you think that your profession is recognized by concerned body(organization)	1. Yes 2. No	
302	Do you think that resources (equipment's) in your hospital are enough as compared to its level?	1. Yes 2. No	
303	Do you think that your Job is supervised by concerned body(organization)	1. Yes 2. No	
304	Do you think that your working area(unit) is supported by concerned body(organization)	1. Yes 2. No	
305	Do you think that your working environment is suitable	1. yes 2. no	
Part IV Maslach Burnout Inventory assessment			
<i>Emotional exhaustion item</i>			
401	I feel emotionally exhausted from my work	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	

402	I feel used up at the end of the workday	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
403	I feel fatigued when I get up in the morning and have to face another day on the job.	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
404	Working with people all days is really a strain for me	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
405	I feel burned out from my work	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
406	I feel frustrated by my work	0. never 1. a few times a year or less	

		2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
407	I feel I am working too hard on my job	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
408	Working with people directly puts too much stress on me	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
409	I feel like I am at the end of my rope	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
<i>Depersonalization item</i>			
410	I feel I treat some recipients as if they were impersonal objects	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month	

		4. once a week 5. a few times a week 6. every day	
411	I have become more callous toward people since I took this job	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
412	I worry that this job is hardening me emotionally	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
413	I don't really care what happens to some recipients	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
414	I feel recipients blame me for some of their problems	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	

<i>Personal accomplishment</i>			
415	I can easily understand how many recipients feel about things	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
416	I deal very effectively with the problems of my recipients	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
417	I can easily create a relaxed atmosphere with my recipients.	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
418	I feel exhilarated after working closely with my recipients	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
419	I have accomplished many worthwhile things in this job.	0. never 1. a few times a year or less	

		2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
420	I feel very energetic	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
421	In my work, I deal with emotional problems very calmly.	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	
422	I feel I am positively influencing other people's lives through my work	0. never 1. a few times a year or less 2. once a month or less 3. a few times a month 4. once a week 5. a few times a week 6. every day	

