Burnout and its associated factors among medical laboratory professional in public hospitals of Jimma Zone, Southwest Ethiopia

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Abstract: Burnout is a work-related mental and physical syndrome resulting from long-term exposure to emotional and interpersonal stressors. The health of Medical Laboratory Professionals may be affected by prolonged exposure to massive stress, despite widely prevalent burnout but a few studies about the specific patterns of burnout in this profession.

Purpose: This study aimed to assess the magnitude of burnout and its associated factors among Medical Laboratory Professionals in public hospitals of Jimma zone, southwest Ethiopia, from May 1 - June 1, 2022.

Patients and methods: An institutional-based cross-sectional study was conducted, on 153 study participants. Data collection was done using a pretested self-administered questionnaire. Data were verified, encoded, entered with EPI INFO Version 7, and analyzed using SPSS Version 21.0. Descriptive statistics were analyzed through cross-tabulation. Further, bivariate and multivariable logistic regression analysis were computed to identify predictor variables significantly associated with the outcome variable. All variables with p-value ≤ 0.25 in bivariate analysis were entered into the multivariable logistic regression model to adjust possible confounders. Finally, variables with a p-value of <0.05 in the final analysis, were considered to explain the presence of association.
**Results:** A total of 153 participants were included in this study. The majority, 89 (58.2%) were age less than 29 years with a mean ±SD (29.95 ± 4.2). Forty-six (30.1%) reported suffering from a high level of burnout. In the multivariate logistic regression analysis, smoke a cigarette of several days [(AOR = 1.74, 95% CI (0.94 to 3.91)], abuse of drugs [(AOR = 0.083, 95% CI (0.034-0.247)], lack of adequate sleep [(AOR = 0.237, 95% CI (0.098-0.643)], not having family relationship [(AOR = 4.73, 95% CI (1.82-7.324)], demonstrated a statistically significant association with the burnout.

**Conclusion and recommendations:** According to the findings of this study, drinking alcohol, abuse of drugs, smoking cigarette of several days, lack of adequate sleep, and not having family relationship were significant predictor variables for burnout in MLPs.

These findings contribute to further research with larger sample sizes and the establishment of interventions to improve the mental health and well-being of MLPs.

**Keywords:** Levels of burnout, Medical Laboratory, Public Hospitals, Jimma Zone, Ethiopia.

**Introduction**

Burnout is a work-related mental and physical syndrome resulting from long-term exposure to emotional and interpersonal stressors at work. The health of medical laboratory professionals may be affected by prolonged exposure to massive stress. Burnout syndrome is the most common and threatening health problem with observable symptoms and is a diagnosable disorder.¹

Burnout can manifest in medical laboratory professionals in a variety of signs and symptoms. Depression, exhaustion, low morale, lost interest in work, lower productivity, tardiness, absences, anger, and frustration are a few of the symptoms. Other ones include headaches, backaches, muscular tension, recurrent upper respiratory infections, and depression. Role conflict, resistance to change, and a sense of isolation from other healthcare workers are symptoms of burnout.²

Laboratory investigations are considered the leading role in the field of patient care routinely, but they may put pressure on professionals, when a long time sitting in front of the computer, focusing on the microscope for a long time, and bending over is the nature of the work, manipulating various chemicals. When these activities are not ergonomic, they will cause workplace burnout and stress or further negatively impact health, regulate these activities so that you can accomplish work without distraction.³
Burnout may affect work performance negatively and cause reduced efficacy and lower productivity. Due to increased efficiency requirements, lower operating budgets, and faster response times, medical laboratory professionals faced job burnout risks and consequences related to laboratory errors. The annual economic cost of medical errors is estimated to be close to US $282 billion, of which laboratory errors have as a cause.

Thus this study will significantly help laboratory professionals understand more about burnout experiences, such as the causes of its effects, workplace risk factors that may contribute to it, and factors that can reduce its effects.

**Material and methods**

**Study area and period**

This institutional-based cross-sectional study was conducted in public hospitals of the Jimma zone from May 1-June 1, 2022. Jimma is the town of Jimma zone which is one of the 18 zones of the Oromia Regional State located in the Southwestern part of Ethiopia at 352 km far from Addis Ababa, the capital city of Ethiopia. This zone has a total population of 2,486,155, of which 1,250,527 men and 1,235,628 are women, and has an area of 15,568.58 km².

There are 770 Health facilities in the Jimma zone. Of these, nine of which are public hospitals. All the public hospitals participated in this study, which includes 1 medical center, 3 general hospitals, and 5 primary hospitals. These hospitals include Jimma University Medical Center, Shenen-Gibe General Hospital, Limu-Genet General Hospital, Agaro General Hospital, Seka Primary Hospital, Dedo Primary Hospital, Nada Primary Hospital, Seltema Primary Hospital, and Dimtu Primary Hospital. Among all of 2,373 healthcare workers, 162 of them are medical laboratory professionals. Among nine public hospitals studied, Jimma Medical Center is the only teaching and referral hospital in the Southwestern part of the country that gives specialized medical cares to approximately 15 million people, generalized service to in-patients and outpatients, and serves as a referral center for the rest of surrounding peripheral hospitals.
Study design

A quantitative institutional-based cross-sectional study was conducted from May 1-June 1, 2022 using a self-administered questionnaire to assess the levels of burnout and its associated factors.

Source Population

All healthcare professionals working in the public hospitals of the zone

Study population

All medical laboratory professionals working in public hospitals of the Jimma zone who fulfilled the inclusion criteria during the study period.

Inclusion criteria

All medical laboratory professionals working in public hospitals in the Jimma zone who were present during the data-collection period.

All medical laboratory professionals had at least one year of work experience in the same or a similar healthcare facility.

Exclusion criteria

All medical laboratory professionals who were unwilling to participate in this study.

All non-medical laboratory professionals who were delivering other than diagnostic service in the laboratory were excluded.

Sample size

The sample size of the study was all medical laboratory professionals working in the public hospitals of Jimma zone. The total population of medical laboratory professionals in Jimma Zone was 162.

Among them, 83 from Jimma medical center, 14 from Shenen-Gibe general hospital, 13 from Agaro general hospital, 12 from Limu-Genet general hospital, 9 from both Seka and Dedo primary hospital, 8 from Nada primary hospital and then 7 from both Seltema and Dimtu primary hospital.
Data collection procedures

The study used raw data obtained from MLPs employed by public hospitals in the Jimma zone. Data were collected using a pretested self-administered questionnaire after explaining the study’s goal and obtaining written informed consent from the study participants. The investigator chose public hospitals because they provide wide health services to large number populations with advanced laboratory tests. The standard tool, Maslach Burnout Inventory (MBI), was used to measure levels of burnout which comprises 22 items regrouped into three subscales: EE, DP, and a reduced feeling of PA were graded on a Liker scale ranging from 0 (never) to 6 (every day) [8]. The self-administered questionnaire developed in English languages to indicate their feelings for independent variables including socio-demographic factors, individual factors, working environment factors, and organizational factors used to collect data in this study.

Measurement

Maslach Burnout Inventory Human Services Survey (MBIHSS): Interprets the scores for each stage were the summative total of the score for each area of the questions. A high score on the EE and, or DP stages, according to the MBI, is indicative of burnout. On the other hand, a low level of PA score is indicative of a high level of burnout.

Data analysis procedures

Data were verified for completeness, encoded, and entered into EPI INFO Version 7, and exported to SPSS Version 21.0 for analysis. The descriptive statistical analysis including frequency and percentages of the results was analyzed and presented in tables. A bivariate logistic regression evaluated the presence of preliminary association between the independent and outcome variables. Variables with a p-value of <0.25 in the bivariate logistic regression were considered for the multivariate logistic regression analysis to control the effects of the confounding variables on the outcome. Finally, considering a confidence level of 95% and a p-value of <0.05 was used as a predictor of burnout.

Data quality management

All data collection tools were pre-tested on 5% of the samples at Jimma Health Centre to assess instrument
simplicity, flow, and consistency. The data was collected by three trained BSc medical laboratory professionals who were trained by the investigator. There were regular meetings between the data collectors and the principal investigator during data collection. The supervisor checked each collected questionnaire for errors, consistency and completeness from all of public hospitals.

**Ethical consideration**

An ethical approval letter was obtained from the Jimma University, Institutional Review Board (IRB), with letter reference number of IHRPGN/352//22 dated February 28, 2022. Besides to that, letter of cooperation was received from Jimma Zone Health Bureau. Finally, the Chief Executive Officers of the Hospitals were informed through support letters from the higher officials. Just before actual data collection process, written informed consent was obtained from each participant.

**Results**

A total of 153 study participants were included in the study with a response rate of 94.4%. From this, the majority 89 (58.2%) were age less than 29 years with a mean ±SD (29.95 ± 4.20). Besides, about 88 (57.5%) of the participants were male. Regarding their marital status, nearly half of the respondents, 85 (55.6%), were single. Moreover, most participants 121 (79%) had a bachelor’s degree and almost half 78 (51%) had less than five years of work experience. Of the study participants, 77 (50.3%) worked more than 60 hours per week (Table 1).

In this study, the overall prevalence of burnout among medical laboratory professional (MLP) was 46 (30.1%). Regarding components of burnout, 97 (63.4%), 112 (73.2%), and 98 (64.1%) were high emotional exhaustion (EE), high depersonalization (DP), and low personal accomplishment (PA), respectively.

**Factors associated with burnout**

Among the factors associated with burnout, a statistical significance was observed in study participants who drink alcoholic beverages [(AOR= 4.72, 95% CI (2.34-9.73)], frequently abuse of drugs [(AOR= 0.083, 95% CI (0.034-0.247)], smoke cigarette [(AOR= 1.74, 95% CI (0.94-3.91)], lack adequate sleep [(AOR= 0.237, 95% CI (0.098-0.643)], not having family relationships [(AOR= 4.73, 95% CI (1.82-7.324)] (Table 2).
**Discussion**

To determine burnout, there is a need to study the magnitude of burnout and its associated factors among medical laboratory professionals (MLPs) in Ethiopia, particularly in the current study region. According to the findings of this study, about 30.1% of MLPs working in Jimma zone public hospitals were reported to have burnout. About 63.4% and 73.2% of study participants scored the highest EE (emotional exhaustion) and DP (depersonalization) subscales, respectively. On the other hand, about 64.1% of them scored low PA (personal accomplishment) subscale.

This study showed level of burnout among medical laboratory professionals (MLPs), whereas there is no study on burnout among MLPs in the Jimma zone or even Ethiopia. There have also been a few previous studies on the prevalence of burnout syndrome among other health professionals in southwestern Ethiopia. The results of this study were similarly low compared to the earlier findings done among all professionals from the Amhara district public hospital and Jimma university teaching hospital, which include 50.4% and 36.7%, respectively. Furthermore, the level of burnout in this study was much higher than 13.7% in the previous research from the Gondar university hospital. Furthermore, this study's finding is higher than the South African study in terms of EE, DP, and PA sub-scales, which were 16%, 13%, and 10%, respectively. Also, considering the subclasses from this study EE (16 %), DP (13 %), and PA (10%) are higher than South Africa EE (26.6%), DP (22.5% %), and PA (10.4%) previous study from Belgium. This significant prevalence difference might be due to socio-demographic factors, different catchment regions, workload, or a difference in the hospitals' character.

This study's socio-demographic variables including, marital status, service year, income, and working showed a statistically significant burnout score. These findings were consistent with the previous study in Dire Dawa, Ethiopia. Also, these findings are supported by the studies conducted in the eastern United States and Poland for the marital status and working hours factors. Nonetheless, compared to other findings from Turkey, there was no significant difference regarding gender, marital status, education level, and working unit factors.

Medical laboratory professionals who experienced insomnia or related sleeping disorders were significantly associated with burnout experience. Also, a similar finding was obtained from Spain. The possible reason
might be working night shifts that could disturb an individual’s circadian cycle, rest, and sleep. Therefore, those professionals working on night shifts must sleep in the daytime to have deep and good quality sleep. Regarding job satisfaction, in this study, about 37% of respondents were dissatisfied with their job, and similar were obtained from Malaysia.\textsuperscript{19} The possible reason might be that laboratory investigations may put pressure on professionals when sitting in front of a computer for a long time, focusing on the microscope, bending over the nature of the work, and manipulating various laboratory chemicals.\textsuperscript{3} Burnout among the MLPs is associated with individuals having addictive behavior, including alcohol drinking, drug abuse, cigarette smoking, and not having family relationships. Nevertheless, a similar finding was obtained from the southwest part of Ethiopia.\textsuperscript{11}

\section*{Conclusion}

According to the findings of this study, drinking alcohol, abuse of drugs, smoking cigarette of several days, lack of adequate sleep, and not having family relationship were significant predictor variables for burnout in medical laboratory professionals (MLPs). These findings contribute to further research with larger sample sizes and the establishment of interventions to improve the mental health and well-being of MLPs.

\section*{Acknowledgments}

We would also like to thank data collectors, study participants, and supervisors as well as those who directly or indirectly contributed to this study.

\section*{Disclosure}

The author reports no conflicts of interest in this work.

\section*{References}


Table 1: Socio-demographic characteristics among medical laboratory professionals in public hospitals of Jimma zone, Southwest Ethiopia, from May 1-June 1, 2022. (n = 153).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Frequency, n=153</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>88</td>
<td>57.5</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>65</td>
<td>42.5</td>
</tr>
<tr>
<td>Marital Status</td>
<td>Single</td>
<td>85</td>
<td>55.6</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>64</td>
<td>41.8</td>
</tr>
<tr>
<td></td>
<td>Divorced</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>Widowed</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Educational status</td>
<td>Diploma</td>
<td>11</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s degree</td>
<td>121</td>
<td>79.1</td>
</tr>
<tr>
<td></td>
<td>Master’s Degree</td>
<td>21</td>
<td>13.7</td>
</tr>
<tr>
<td>Service Years</td>
<td>0-5 years</td>
<td>78</td>
<td>51.0</td>
</tr>
<tr>
<td></td>
<td>6-10 years</td>
<td>67</td>
<td>43.8</td>
</tr>
<tr>
<td></td>
<td>11-15 years</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>&gt;16 years</td>
<td>6</td>
<td>3.9</td>
</tr>
<tr>
<td>Average working hours per week (including duty-time)</td>
<td>35-40</td>
<td>19</td>
<td>12.4</td>
</tr>
<tr>
<td></td>
<td>41-45</td>
<td>14</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
<td>46-50</td>
<td>5</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>50-60</td>
<td>38</td>
<td>24.8</td>
</tr>
<tr>
<td></td>
<td>&gt;60</td>
<td>77</td>
<td>50.3</td>
</tr>
</tbody>
</table>

Table 2: Multivariable (AOR) estimates and approximate 95% confidence intervals of individual factors associated with burnout among MLPs in public hospitals of Jimma zone, Southwest Ethiopia, from May 1-June 1, 2022. (n = 153)
<table>
<thead>
<tr>
<th>Variables</th>
<th>Burnout</th>
<th>COR (95%CI)</th>
<th>P-value</th>
<th>AOR (CI 95%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drink alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15(17.6%)</td>
<td>27(9.8%)</td>
<td>0.115</td>
<td>4.72 (2.34-9.73)</td>
<td>0.0001</td>
</tr>
<tr>
<td>No</td>
<td>92(20.3%)</td>
<td>19(52.3%)</td>
<td>(0.052–0.256)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abuse drugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8(7.5%)</td>
<td>21(45.7%)</td>
<td>0.092</td>
<td>0.083 (0.034-0.247)</td>
<td>0.000</td>
</tr>
<tr>
<td>No</td>
<td>99(92.5%)</td>
<td>25(54.3%)</td>
<td>(0.038–0.243)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoke a cigarette</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Several days</td>
<td>37(34.6%)</td>
<td>26(46.5%)</td>
<td>0.95(0.33–1.23)</td>
<td>1.74 (0.94-3.91)</td>
<td>0.000</td>
</tr>
<tr>
<td>Sometimes</td>
<td>23(21.5%)</td>
<td>18(39.1%)</td>
<td>1.08(0.66–2.34)</td>
<td>0.007</td>
<td></td>
</tr>
<tr>
<td>Never at all</td>
<td>47(43.9%)</td>
<td>2 (4.4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of adequate sleeping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11(10.3%)</td>
<td>16(34.8%)</td>
<td>0.215(0.09–0.513)</td>
<td>0.237 (0.098-0.643)</td>
<td>0.0003</td>
</tr>
<tr>
<td>No</td>
<td>96(89.7%)</td>
<td>30(65.2%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not having family relationship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>93(87%)</td>
<td>26(56.5%)</td>
<td>5.1(2.27–11.48)</td>
<td>4.73 (1.82-7.324)</td>
<td>0.0001</td>
</tr>
<tr>
<td>No</td>
<td>14(13%)</td>
<td>20(43.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Abbreviations:** DP, depersonalization; FE, emotional Exhaustion; MBI, Maslach Burnout Inventory; MLP, medical laboratory professional; PA, personal accomplishment; COR, crude odd ratio; CI, confidence interval; AOR, adjusted odd ratio; N= number of healthcare providers.