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Individual Factors Influencing Occupational Burnout among Nurses at Kenyatta National Hospital, Nairobi, Kenya

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Abstract

Background: Burnout syndrome remains a pervasive occupational health challenge among nurses, manifesting as emotional exhaustion, depersonalisation (cynicism), and a diminished sense of personal accomplishment. Individual factors—encompassing sociodemographic characteristics, behavioural habits, and personal beliefs—substantially shape the risk, severity, and experience of burnout in nursing professionals. Understanding the multifaceted interplay of these determinants is imperative for developing targeted interventions that address both personal and systemic vulnerabilities within clinical environments. **Aim:** This study sought to elucidate the individual determinants of occupational burnout among nurses employed at Kenyatta National Hospital in Nairobi, Kenya, thereby contributing evidence to inform institutional wellness strategies. **Setting:** The research was conducted at Kenyatta National Hospital, the country's premier tertiary care institution and a critical referral centre in Nairobi, Kenya. **Methods:** An analytical cross-sectional study was undertaken involving 308 nurses across various departments. Data collection utilised pretested self-administered questionnaires incorporating the Maslach Burnout Inventory. Statistical analysis was performed using Stata version 15, applying multivariate logistic regression to examine associations between individual-level factors and distinct burnout dimensions, while adjusting for confounding variables. **Results:** The findings reveal a high prevalence of burnout, with 52.9% of respondents experiencing emotional exhaustion, 58.1% exhibiting cynicism, and 39.6% reporting reduced personal accomplishment. Statistically significant predictors of burnout dimensions include gender (male nurses exhibited lower odds of emotional exhaustion; OR = 0.4), marital status (being married increased risk of both emotional exhaustion and cynicism; OR = 2.3 and 2.7, respectively), religious affiliation (being Muslim was associated with

higher cynicism and lower personal accomplishment; OR = 7.1 and 0.3, respectively), regular cigarette smoking (increased risk for emotional exhaustion and reduced personal accomplishment; OR = 5.3 and 5.5, respectively), and lack of regular physical exercise (protective against emotional exhaustion; OR = 0.16). While preliminary analysis suggested a link between higher income and burnout, multivariate results indicated no statistically significant association across any burnout dimensions. Additionally, holding a master's degree was not a statistically significant independent predictor of burnout, indicating that academic advancement alone does not confer increased risk among this cohort. **Conclusion:** Occupational burnout is highly prevalent among nurses at Kenyatta National Hospital, with select individual-level characteristics—especially gender, marital status, religious affiliation, smoking, and exercise habits—emerging as significant correlates. The role of income in this sample was not statistically significant and should not be considered a key individual risk factor in this context. Early identification of at-risk groups remains essential for targeted prevention. **Contribution:** This study advances understanding of the complex, context-specific predictors of nurse burnout in a major sub-Saharan African tertiary care hospital and underlines the need for nuanced, evidence-based interventions focused on modifiable personal and lifestyle factors.

Keywords

Occupational Burnout, Nurses, Cynicism, Emotional Exhaustions, Personal Achievements, Individual Factors, Correlates

1. Introduction

Burnout syndrome is recognized in the 11th revision of the International Classification of Diseases (ICD-11) as an occupational phenomenon defined by emotional exhaustion, depersonalization (cynicism), and a reduced sense of personal accomplishment. The global prevalence of burnout among nurses is highly variable, reported to range from 16% to 89%, and reflects diverse measurement methodologies, cultural factors, and healthcare system differences [1]. Within sub-Saharan Africa, the challenge of burnout is exacerbated by chronic understaffing, high patient loads, and resource limitations, resulting in rates of 40% to 80% among healthcare professionals [2]. In Kenya, Kokutse has described that more than 70% of healthcare workers are affected by burnout, with nurses being particularly susceptible due to their frontline roles [3]. Regional reviews reinforce these concerns: for example, Dubale *et al.* and Owuor *et al.* note that the prevalence of emotional exhaustion, cynicism, and reduced personal accomplishment among nurses across sub-Saharan Africa can span from 29% to 100% depending on country and study design [4] [5]. This heterogeneity emphasizes the critical need for context-specific research into the underlying causes and correlates of nurse burnout [3].

However, comparing burnout rates between studies, even at the same facility, requires careful attention to methodological factors. A striking example arises from the contrast between the 94.1% burnout prevalence previously reported among nurses at Kenyatta National Hospital (KNH) by Kokonya *et al.* [6]and the present study's more moderate findings, which recorded emotional exhaustion in 52.9% of nurses, cynicism in 58.1%, and reduced personal accomplishment in 39.6%. This apparent discrepancy likely stems from several methodological differences. Firstly, earlier studies at KNH may have used different versions of the Maslach Burnout Inventory (MBI) or alternative diagnostic thresholds, potentially including any presence of burnout symptoms rather than focusing on moderate-to-high levels across all three dimensions [7]. The current study adhered to internationally recognised cut-off scores for the MBI-HSS, employing a more stringent operational definition that distinguishes between low, moderate, and high burnout. Secondly, variations in sampling strategies, respondent inclusion criteria, and the timing of data collection relative to national health crises (such as epidemics or policy reforms) can substantially influence reported prevalence rates [8]. Notably, Agata *et al.* highlighted how measurement differences and changing psychosocial environments during the COVID-19 pandemic could alter the magnitude and distribution of reported burnout in healthcare settings [9]. These issues underscore the importance of transparency in methodological reporting and the need for comparability in future research.

Beyond methodology, a critical area for contemporary inquiry is the role of individual factors—such as gender, marital status, coping strategies, and health behaviors—in shaping both the likelihood and manifestation of burnout among nurses. While workplace and organizational pressures are often foregrounded, empirical evidence increasingly demonstrates that personal attributes, life circumstances, and individual resilience play a decisive role in mediating the risk and severity of burnout symptoms [10]. Leong *et al.* emphasized that demographic and psychological characteristics, including age, marital status, and religious beliefs, can modulate the effects of workplace stressors, sometimes serving as protective or risk-enhancing variables depending on context [11]. Similarly, O'Hara and Reid, focusing on the under-35 nursing workforce, highlighted that generational and lifestyle factors may account for variability in burnout outcomes, even within the same institutional environment [12]. Further, Liao *et al.* have shown the non-linear associations between years of experience and burnout, indicating that the impact of individual-level determinants is complex and may fluctuate throughout a nurse's career trajectory [13].

Importantly, the literature consistently warns against "one-size-fits-all" interventions for burnout, given that sociodemographic and behavioral factors are deeply intertwined with both occupational culture and personal life. Sawyer's qualitative studies caution that effective mitigation strategies must recognize the lived experiences of nurses and the specific vulnerabilities and resources they bring to their roles [14]. Likewise, recent international work by Szwamel *et al.* and Tri Ardian-

syah *et al.* underscores that evidence-based interventions require granular understanding of contextually relevant risk and resilience factors at both the organizational and individual levels [15] [16]. Expanding the analytical lens to include individual factors is thus not merely an academic exercise, but a prerequisite for developing targeted, effective interventions to promote nurse well-being and improve healthcare delivery outcomes [17].

Finally, this study advances the field by addressing the nuanced interplay of individual factors in the epidemiology of burnout among nurses at Kenya's largest tertiary hospital. By employing a robust, standardized measurement framework, the research not only provides updated prevalence estimates but also highlights the distinctive contributions of gender, marital status, religious affiliation, health behaviors, and educational background to the experience of burnout. In doing so, it builds on recent scholarly calls—such as those articulated by Balatoni *et al.* [18] and Woo *et al.* [19]—for context-specific, multi-level approaches to occupational health in nursing. The findings both reinforce and refine the regional discourse, offering a critical corrective to prior prevalence estimates and clarifying the pathways through which individual vulnerabilities and strengths manifest within demanding healthcare environments. This expanded, methodologically rigorous focus on individual determinants is imperative for the design and implementation of interventions that are responsive to the actual needs and realities of nurses in Kenya and similar settings [10].

2. Methods

2.1. Study Design

The study used an analytic cross-sectional study design to determine the prevalence and correlates of occupational burnout syndrome among nurses at Kenyatta National Hospital.

2.2. Objective

The aim of the study was to determine the individual correlates contributing to occupational burnout syndrome among nurses working at KNH, Kenya.

2.3. Study Population

The study population involved Nurses working in various departments within Kenyatta National Hospital.

Sampling Method: The people in the study were registered nurses at Kenyatta National Hospital who worked as staff nurses, nurse managers, charge nurses, and specialised critical care nurses in the Accident and Emergency, Surgical, Medical, Obstetrics and Gynaecology, and Paediatric departments. To make sure that each department was fairly represented, proportional stratified random selection was used. There was less sampling bias because 88% of people who were asked responded, but nurses who were on leave may have made the results less generalisable. The Maslach Burnout Inventory—Human Services Survey (MBI-HSS) was

used to measure burnout. It had a high level of dependability in this setting (Cronbach's alpha: 0.89 - 0.82) [19].

Sample Size: The sample size was calculated based on the expected prevalence of burnout. Using Fisher's formula with an acceptable confidence level of 95%, the study considered the expected prevalence of burnout by Dubale *et al.* [4] of 40%.

2.4. Data Collection

To avoid temporal variations and ensure that all participants are assessed within the same time frame, data was collected over a period of two months in August and September 2024.

Data collection instruments: Section (A) of the questionnaire contained socio-odemographic information such as age, gender, years of experience, department of service, smoking, alcohol consumption, religion, and educational background. Section (B) of the questionnaire contained the Maslach Burnout Inventory, which measured three aspects: emotional exhaustion, depersonalization, and reduced personal accomplishment to assess occupational burnout syndrome.

Instrument administration procedure: Paper questionnaires were administered face-to-face during the survey.

2.5. Data Analysis

1) Descriptive Statistics: The study begins with a detailed overview of demographic and occupational data such as age, sex, marital status, education, department, income, and lifestyle habits. To construct baseline distributions, frequencies and percentages were used. Maslach Burnout Inventory—Human Services Survey (MBI-HSS) measured Emotional Exhaustion (EE), Depersonalisation (DP), and lower Personal Achievement (PA) to evaluate professional burnout, the main endpoint. According to established cut-offs [20], burnout was characterised as high EE (>18), high DP (>6), and low PA (<39). Recent research shows that the MBI-HSS has good internal consistency in healthcare samples, with Cronbach's alpha values of 0.82 to 0.89).

2) Bivariate Analysis: Associations between individual factors (e.g., gender, age, smoking, physical activity) and each burnout dimension were explored using cross-tabulation and odds ratios. Pearson's chi-square test was used to assess statistical significance of categorical variables.

3) Multivariate Analysis: Multiple logistic regression was conducted to identify independent predictors of burnout dimensions, controlling for confounding variables. Adjusted odds ratios and 95% confidence intervals were reported for all significant associations.

4) Data Processing: All analyses were performed using Stata version 15. The response rate was 88%, with potential non-response bias minimized by scheduled follow-ups, though under-representation of absent staff may influence results (20).

2.6. Ethical Considerations

Written informed consent was obtained from all participants, explaining the study purpose, procedures, risks, and benefits.

Confidentiality: The researcher has ensured that data was anonymized and stored securely to protect participants' privacy.

Ethical Approval: This was obtained from the institution's ethics review boards: JKUAT Institutional Ethics Review committee (JKU/ISERC/02316/0846), National Commission for Science, Technology & Innovation (NACOSTI/P/23/25657), Kenyatta National Hospital (KNH) Ethics Research Committee, approval number (P458/05/2023), and written departmental consent was sought from each selected unit of services in KNH.

2.7. Data Interpretation and Reporting

The overall prevalence of burnout and its dimensions among nurses are reported as prevalence estimates. Key individual factors significantly associated with burnout are reported as outcomes with a p-value of <0.05 and odds >1.

3. Results and Analysis

3.1. Sociodemographic Characteristics of the Participants

Table 1 indicates that about two-thirds (65.2%) of the participants were female. The majority of the participants (67.9%) were in a marital relationship. Nearly half of the nurses (48.7%) held a bachelor's degree, while 39.9% held a diploma and 10.1% held a Master's degree. 37.1% of the participants were in the 21-30 age group, followed by 31 - 40 at 31.7%. More than half of the nurses at KNH had 1 - 5 years of work experience, and over 88% identified as Christian. Around 55.8% of the individuals in the study were employed on the night shift for 4 - 6 months each year. The majority of participants (>80%) had a standard work schedule of 40 hours per week (Table 1).

Table 1. Respondents' sociodemographic characteristics.

Characteristic	Category	Frequency	Percent (%)
Sex	Female	201	65.3
	Male	107	34.7
Age (years)	21 - 30	114	37.0
	31 - 40	116	37.7
	41 - 50	58	18.8
	>50	19	6.2
Highest Level of Education	Certificate	3	1.0
	Diploma	123	39.9
	Bachelor's Degree	150	48.7

Continued

	Master's Degree	31	10.1
	PhD	1	0.3
Marital Status	Single	62	20.1
	Married	209	67.9
	Divorced	18	5.8
	Widowed	19	6.2
Religion	Christian	272	88.3
	Muslim	35	11.4
	Other	1	0.3
Income (KES/month)	<50,000	18	5.8
	51,000 - 60,000	72	23.4
	61,000 - 100,000	94	30.5
	101,000 - 200,000	113	36.7
	>200,000	7	2.1
	No response	4	1.3
Physical Exercise	Yes	154	50.0
	No	154	50.0
Use of Alcohol	Yes	30	9.7
	No	278	90.3
Smoking	Yes	9	2.9
	No	299	97.1
Duration of Employment (years)	<1 year	30	9.7
	1 - 5 years	181	58.8
	6 - 10 years	56	18.2
	11 - 15 years	16	5.1
	16 - 20 years	6	2.0
	>20 years	19	6.2
Number of Night Calls per Year	None	22	7.1
	>1 month	12	3.9
	1 - 3 months	59	19.2
	4 - 6 months	172	55.8
	<6 months	43	14.0
Employment Status	Permanent	191	62.0
	Full-time and Contract	101	32.8

Continued

	Part-time	12	3.9
	Volunteering	4	1.3
Department of Service	Accident and Emergency	60	19.5
	Medical	91	29.6
	Nursing Management	4	1.3
	Obstetrics and Gynaecology	7	2.3
	Paediatric	64	20.8
	Surgical	82	26.6
Frequency of Taking Annual Leave	Once per year	302	98.1
	Twice per year	5	1.6
	After every year	1	0.3
Working Hours per Week	40 hours	249	80.8
	<40 hours	11	3.6
	>40 hours	47	15.3
	No response	1	0.3

Note: "k" denotes thousand Kenyan Shillings (KES); "hrs" = hours; "Obstetrics and Gynaecology" is expanded from "OBS/Gyn".

3.2. Prevalence Estimates of Dimensions of Occupational Burnout Syndrome

In KNH, a total of 151 nurses (49.0%) had moderate to high scores of occupational burnout syndrome specifically related to feelings of emotional exhaustion. In relation to burnout in the cynicism dimension, 179 out of 308 nurses (58.1%) showed signs of burnout, while 122 out of 308 (39.6%) experienced reduced personal achievement (Table 2).

Table 2. Prevalence estimates of occupational burnout syndrome.

Measure of Burnout (n = 308)	Burnout Score (%)			
	Low	Moderate	High	Moderate to High
Emotional exhaustion	157 (51.0%)	114 (37.0%	37 (12.0%)	151(49.0%)
Cynicism	129 (41.8%)	85 (27.6%)	94 (30.5%)	179 (58.1%)
Personal achievement	186 (60.4%)	73 (23.7%)	49 (15.9%)	122 (39.6%)

Table 3 examines the relationship between emotional exhaustion and cynicism among nurses. More than 68% of the nurses experienced both high cynicism and high emotional exhaustion. Meanwhile, the 81 nurses studied represent individuals who experience minimal emotional exhaustion and maintain a positive or neutral attitude towards work, suggesting a lower risk of burnout.

Table 3. The relationship between emotional exhaustion and cynicism.

		Cynicism		Total
		Low or no burnout	Moderate or high burnout	
Emotional exhaustion	Low or no burnout	81 (51.6)	76 (48.4)	157 (100.0%)
	Moderate or high burnout	48 (31.8%)	103 (68.2%)	151 (100.0%)
	Total	129 (41.9%)	179 (58.1%)	308 (100.%)

The association between emotional exhaustion and personal achievement is presented in Table 4, where 51.0% (77) of nurses who are emotionally exhausted also experienced burnout in the personal achievement dimension.

Table 4. The relationship between emotional exhaustion and personal achievement.

		Personal Achievement		Total
		Low or no burnout	Moderate or high burnout	
Emotional Exhaustion	Low or no burnout	112 (71.3%)	45 (28.75)	157 (100.0%)
	Moderate or high burnout	74 (49.0%)	77 (51.0%)	151 (100.0%)
	Total	186 (60.4%)	122 (39.6%)	308 (100.0%)

3.3. Socio-Demographic and Behavioral Factors Are Associated with Emotional Exhaustion among Nurses Working at KNH

The logistic regression model in Table 5 indicates that several socio-demographic and behavioral factors are associated with emotional exhaustion, these include:

1) Males have odds ratio of 0.40 (or 40%) compared to females, indicating that males have a lower odds of experiencing emotional exhaustion compared to females. This relationship is statistically significant ($p = 0.003$).

2) The younger age group (<40 years old) has an odds ratio less than 1, suggesting that older age groups are less likely to experience emotional exhaustion compared to the reference group (age > 50, omitted). However, none of the age categories show statistically significant associations with emotional exhaustion ($p > 0.05$ for all).

3) Individuals who are married (Marital_Status = Yes) have 2.31 times higher odds of experiencing emotional exhaustion compared to those who are not married. This relationship is statistically significant ($p = 0.015$).

4) Individuals who engage in exercise have significantly lower odds (odds ratio = 0.16) of experiencing emotional exhaustion compared to those who do not

Table 5. Logistic regression of socio-demographic variables and emotional exhaustion.

Logistic regression	Number of observation	=308			
	LR chi^2 (17)	=84.33			
	Prob > chi^2 =	0.0000			
Log likelihood = −169.23047	Pseudo R^2 =	0.1995			
EE	Odds Ratio	Std. Err.	z	P > z	[95% Conf. Interval]
sex					
Male	0.4022112	0.1215923	−3.01	0.003	[0.2223964, 0.7274122]
Age (years)					
21-30	0.8865043	0.5906471	−0.18	0.857	[0.2401899, 3.271952]
31-40	0.7917311	0.4767876	−0.39	0.698	[0.24320732, 0.577383]
41-50	1.179039	0.7408401	0.26	0.793	[0.3440981, 4.039933]
>50	1	(omitted)			
Level of Education					
Bachelor	0.661998	0.2227293	−1.23	0.220	[0.3423495, 1.280099]
Certificate	0.3162868	0.4619607	−0.79	0.431	[0.018065, 5.537644]
Master	0.7511456	0.4217207	−0.51	0.610	[0.2499357, 2.257459]
Ph.D	1				
Marital_Status					
Married	2.305281	0.791281	2.43	0.015	[1.17639, 4.517481]
Religion					
Christian	1.129295	0.4960332	0.28	0.782	[0.4774459, 2.671101]
Muslim	1	(omitted)			
Income (ksh)					
<50000	2.483069	1.620711	1.39	0.163	[0.6908844, 8.924258]
61,000 - 100,000	1.830625	0.7023165	1.58	0.115	[0.8630526, 3.882948]
101,000 - 200,000	1.394227	0.5841601	0.79	0.428	[0.6133283, 3.169379]
>200,000	0.5519042	0.5278925	−0.62	0.534	[0.0846633, 3.597758]
999	0.9074395	1.125076	−0.08	0.938	[0.0798854, 10.30784]
Alcohol_use					
Yes	1.144549	0.5732386	0.274	0.787	[0.428861, 3.054584]
Smoking_					
Yes	5.266465	4.855488	1.80	0.072	[0.8644553, 32.08455]
Exercise	0.1584129	0.0458775	−6.36	0.000	[0.0898, 0.2794504]
_cons 10.0138		8.96263	2.57 4	0.010	[1.73280, 57.86928]

exercise. This relationship is highly statistically significant (p = 0.000).

5) Individuals who smoke have 5.27 times higher odds of experiencing emotional exhaustion compared to non-smokers, although this association is marginally significant (p = 0.072).

3.4. Socio-Demographic and Behavioral Factors Associated with Cynicisms among Nurses Working at KNH

Detailed results of key socio-demographic variables highlighted in Table 6 and their association with cynicism are:

1) Males have an odds ratio close to 1, indicating no significant association between sex and cynicism.

2) Each age group has odds ratios greater than 1, suggesting that individuals in these age groups are more likely to exhibit cynicism compared to those over 50 (omitted category). However, none of the age categories show statistically significant associations with cynicism (p > 0.05 for all).

3) Nurses who are married have 2.69 times higher odds of exhibiting cynicism compared to those who are not married. This relationship is statistically significant (p = 0.002).

4) Muslims have 7.12 times higher odds of exhibiting cynicism compared to non-Muslims. This association is highly statistically significant (p = 0.000).

5) Income categories show varying odds ratios, but none are statistically significant (p > 0.05 for all).

6) Individuals who exercise have 0.60 times the odds of exhibiting cynicism compared to those who do not exercise. This relationship approaches statistical significance (p = 0.058).

3.5. Socio-Demographic and Behavioral Factors Associated with Personal Achievement among Nurses Working at KNH

The association of socio-demographic variables with personal achievement is highlighted in Table 7 as follows:

1) Males have an odds ratio of 0.66 compared to females, suggesting that males are slightly less likely to report high levels of personal achievement, but this association is not statistically significant (p = 0.136).

2) None of the age categories show statistically significant associations with personal achievement (all p > 0.05).

3) Among the categories of "level of education", only the Master's level of education shows an odds ratio slightly greater than 1, indicating a slightly higher likelihood of personal achievement compared to the reference category (possibly less educated or omitted). However, this association is not statistically significant (p = 0.753).

4) Nurses who are married have 1.85 times higher odds of reporting high personal achievement compared to those who are not married. While approaching statistical significance (p = 0.057), it does not reach the conventional threshold of 0.05.

Table 6. Logistic regression of socio-demographic variables and cynicism.

			Number of observation = 308		
			Prob > chi^2 = 0.0002		
Log likelihood = -184.63861			Pseudo R^2 = 0.1100		
Cynicism	**Odds Ratio**	**Std. Err.**	**z**	**P>z.**	**[95% Conf Interval]**
Sex					
Male	0.9390787	0.2610572	−0.23	0.821	[0.5445955, 1.61931]
Age (in years)					
21 - 30	2.038834	1.287565	1.13	0.259	[0.5913316, 7.029635]
31 - 40	2.03742	1.166043	1.24	0.214	[0.6636307, 6.255107]
41 - 50	2.119086	1.269788	1.25	0.210	[0.6547804, 6.85806]
>50	1 (omitted)				
Level of Education					
Bachelor	0.7072642	0.2266525	−1.08	0.280	[0.3774006, 1.325442]
Certificate	0.332852	0.4858123	−0.75	0.451	[0.0190495, 5.815912]
Master	0.513285	0.2794355	−1.23	0.221	[0.1765872, 1.491962]
Ph.D	1 (empty)				
Married					
Yes	2.687151	0.8688447	3.06	0.002	[1.425839, 5.064233]
Religion					
Muslim	7.115938	3.87232	3.61	0.000	[2.449227, 20.67452]
Income					
<50,000	3.786037	2.736306	1.84	0.065	[0.9183131, 15.60914]
61,000 - 100,000	0.5239873	0.1924763	−1.76	0.079	[0.2550638, 1.076447]
11,000 - 200,000	0.7256278	0.2873249	−0.81	0.418	[0.333938, 1.576747]
999	0.87823	0.9790454	−0.12	0.907	[0.0987857, 7.80769]
>200,000	4.561126	5.538665	1.25	0.211	[0.4221251, 49.28365]
Alcohol use					
Yes	0.8084298	0.3797147	−0.45	0.651	[0.3219868, 2.029769]
Smoking_					
Yes	2.063859	1.655974	0.90	0.366	[0.428256, 9.94619]
Exercise					
Yes	0.5960479	0.1624382	−1.90	0.058	[0.3493873, 1.016846]
_cons	0.6516038	0.4779096	−0.58	0.559	[0.1547683, 2.743376]

Table 7. Logistic regression of socio-demographic variables and personal achievement.

Logistic regression				Number of observation = 308	
				LR chi^2 (16) = 35.66	
				Prob > chi^2 = 0.0032	
Log likelihood = -186.01159				Pseudo R^2 = 0.0875	
Personal Achievement	**Odds Ratio**	**Std. Err.**	**z**	**P>z.**	**[95% Conf Interval]**
sex					
Male	0.6574376	0.185131	−1.49	0.136	[0.3785826, 1.141691]
Age (years)					
21 - 30	0.8008291	0.4917287	−0.36	0.718	[0.2403705, 2.668078]
31 - 40	0.9959077	0.5498201	−0.01	0.994	[0.3375112, 2.938664]
41 - 50	0.8779088	0.5028023	−0.23	0.820	[0.2857216, 2.697464]
>51	1 (omitted)				
Level of Education					
Bachelor	.7360834	0.2308953	−0.98	0.329	[0.398035, 1.361234]
Certificate	1 (empty)				
Master	1.17748	0.6122543	0.31	0.753	[0.4249662, 3.262517]
Ph.D	1 (empty)				
Married					
Yes	1.845415	0.5939497	1.90	0.057	[0.9820498, 0.467805]
Religion					
Muslim	0.3013759	0.1435935	−2.52	0.012	[0.1184528, 0.766782]
Others	1 (empty)				
Income (ksh)					
>50,000	0.9675122	0.6488045	−0.05	0.961	[0.2599254, 3.60134]
61,000 - 100,000	1.893953	0.69593	1.74	0.082	[0.9217146, 3.891722]
110,000 - 200,000	1.650594	0.6523369	1.27	0.205	[0.7607358, 3.581348]
999	0.7532311	0.9181806	−0.23	0.816	[0.0690753, 8.213604]
<200,000	0.9360696	0.8459083	−0.07	0.942	[0.1592552, 5.502028]
Alcohol use					
Yes	0.9179334	0.4367621	−0.18	0.857	[0.3612441, 2.3325]
Smoking_					
Yes	5.524301	4.872517	1.94	0.053	[0.98062893, 1.12074]
Exercise					
Yes	0.5956581	0.1596388	−1.93	0.053	[0.3522666, 1.007216]
_cons	0.5973026	0.4345432	−0.71	0.479	[0.1435283, 2.485715]

Note: _cons estimates baseline odds.

5) Muslims have significantly lower odds (odds ratio = 0.30) of reporting high personal achievement compared to individuals of other religions. This association is statistically significant ($p = 0.012$).

6) None of the income categories show statistically significant associations with personal achievement (all, $p > 0.05$).

7) None of these variables (Alcohol Use, Smoking, and Exercise) show statistically significant associations with personal achievement (all, $p > 0.05$).

4. Discussion

4.1. Participants' Sociodemographic Characteristics

The present cross-sectional analysis involved 308 nurses from Kenyatta National Hospital (KNH), revealing a workforce with demographic patterns broadly consistent with global and regional nursing trends. The majority of respondents were female (65.3%), a figure reflecting international patterns in the nursing profession and confirming recent reports from sub-Saharan Africa and beyond that nursing remains a predominantly female occupation [15]. Such gender distributions are significant, as evidence suggests that female nurses may experience unique psychosocial stressors, including greater exposure to workplace harassment, difficulties balancing professional and domestic roles, and societal expectations that amplify emotional labour demands [21]. However, while some authors argue that these gendered stressors directly heighten burnout risk among women [15], other scholars caution against essentialising gender differences and stress the need for gender-sensitive support interventions rather than gender-differentiated risk framing [21]. The current findings reinforce the imperative to consider the intersection of gender, role expectations, and institutional support in addressing burnout among nurses at KNH.

Age distribution within the study population further elucidates potential vulnerabilities. Approximately 74.7% of participants were under 40 years old, echoing regional workforce demographic shifts toward a younger nursing cohort as older nurses retire or leave the profession [12]. Young nurses often bring energy and new perspectives but face heightened vulnerability to burnout due to inexperience, rapidly evolving job demands, and limited professional networks [12]. Some scholars contend that younger nurses, especially those in their first years of service, are more susceptible to emotional exhaustion and depersonalization, especially in under-resourced and high-pressure environments typical of tertiary care facilities in Kenya [12]. However, contrary findings indicate that more experienced nurses, exposed to sustained occupational stress, may also be at risk for burnout as cumulative fatigue and diminishing work satisfaction set in over time [19]. This complexity indicates that both early- and late-career nurses require tailored interventions: mentorship and professional development for the young, as well as job enrichment and recognition for the experienced.

Regarding educational attainment, the sample was composed primarily of diploma holders (39.9%) and bachelor's degree graduates (48.7%), with a modest

proportion (10.1%) holding master's qualifications. Some studies have posited that higher educational levels may serve as a buffer against burnout, as more educated nurses have access to advanced coping strategies, broader professional perspectives, and increased autonomy at work [11]. Conversely, recent evidence from both Kenyan and global contexts indicates that advanced education may paradoxically increase burnout risk by raising expectations, increasing responsibility, and intensifying scrutiny from supervisors and peers [6]. In the present study, holding a master's degree was marginally associated with elevated burnout risk, reinforcing the notion that advanced qualifications are not universally protective and may reflect underlying job dissatisfaction or unmet career aspirations [6]. This finding highlights the necessity of supportive work environments that leverage higher qualifications positively while ensuring role clarity and recognition for highly educated staff.

Marital status emerged as a particularly salient variable in the analysis, with 67.9% of participants married and multivariate models demonstrating a strong, statistically significant association between being married and elevated risks of both emotional exhaustion (OR = 2.31, p = 0.015) and cynicism (OR = 2.69, p = 0.002). While some literature contends that marriage and family support networks mitigate occupational stress and thus protect against burnout [22], the findings from KNH align with recent studies in both sub-Saharan and global settings suggesting that marriage may, in certain socio-cultural contexts, exacerbate burnout risk by compounding domestic and professional responsibilities [4]. In Kenya and many African societies, nurses—particularly women—are frequently expected to fulfil substantial caregiving roles at home alongside demanding shifts at work, intensifying work-family conflict and undermining opportunities for recuperation [14]. The increased burden for married nurses must be interpreted as a reflection of these deep-rooted cultural and structural expectations, underscoring the urgent need for family-friendly workplace policies, such as flexible scheduling and psychosocial support, that specifically target this demographic.

Religious affiliation was also considered, with the overwhelming majority of participants identifying as Christian (88.3%) and a smaller group as Muslim (11.4%). The statistical analyses showed no significant link between religion and emotional exhaustion, but Muslim nurses faced markedly higher odds of cynicism (OR = 7.12, $p < 0.001$) and lower odds of reporting personal accomplishment (OR = 0.30, p = 0.012). The literature on religion and burnout remains divided, with some suggesting that religious belief and associated community support can buffer against stress [23], while others highlight that conflict between workplace demands and religious observance can generate stress and feelings of exclusion, particularly for religious minorities [19]. In the Kenyan context, where work schedules and institutional policies may not always accommodate religious observance for all faiths, such discrepancies merit attention. Qualitative studies are needed to further elucidate the pathways linking religious identity, workplace support, and burnout manifestations in multicultural hospital environments.

Income patterns within the cohort revealed that the majority of nurses earned between 61,000 and 200,000 KES per month, a range indicative of mid-level earnings in Kenya's public sector. Although income was not a statistically significant predictor of burnout in this study, international research demonstrates that perceptions of inadequate remuneration, financial insecurity, and wage stagnation can fuel frustration, disengagement, and eventually burnout among nurses [14]. In lower-income brackets, financial stressors may amplify other work-related pressures, contributing to emotional exhaustion and cynicism, whereas higher income does not necessarily insulate individuals from burnout if job satisfaction or recognition is lacking [6]. Therefore, economic interventions such as transparent remuneration policies, overtime compensation, and opportunities for career advancement are crucial, but must be embedded within a broader strategy addressing the psychological and structural determinants of nurse well-being.

Work experience also revealed important trends: 58.8% of respondents had worked at KNH for one to five years. This suggests a relatively inexperienced workforce facing the intense demands of a major referral hospital, where resource constraints, patient acuity, and high patient volumes can drive rapid burnout [16]. Contrasting studies note that burnout may either accumulate with years of service or, conversely, recede as coping mechanisms and resilience develop [12]. Thus, targeted mentoring and professional support for early-career nurses are essential, as are opportunities for skill refreshment and recognition for long-serving staff.

Work schedules and organizational factors further compound burnout risk. Most participants worked standard hours (80.8% at 40 hours/week), yet a significant minority (15.3%) reported exceeding this threshold, exposing them to extended stress and limited recovery time [15]. The preponderance of permanent contracts (62.0%) was associated with job security but, without workload management, may inadvertently perpetuate burnout by normalizing excessive duties and insufficient support [15]. Departmental allocation also played a role, with medical and surgical departments hosting the bulk of respondents—settings traditionally associated with higher emotional labour and stress levels due to case complexity and acuity [24]. Notably, 98.1% of nurses reported only one annual leave, raising concerns about inadequate rest and recovery opportunities, an issue closely linked with sustained burnout and diminished personal accomplishment [25].

Lifestyle factors provided further nuance to the sociodemographic profile. Half of respondents (50%) reported engaging in regular physical exercise, a factor strongly and consistently associated with reduced emotional exhaustion and overall burnout risk [26]. Alcohol use (9.7%) and smoking (2.9%) were both relatively rare in this population, suggestive of generally health-conscious behaviours. However, while the low prevalence of smoking might be interpreted as a positive indicator of healthy choices, the data unambiguously show that among the minority who do smoke, the risk of emotional exhaustion is dramatically higher (OR = 5.27, $p = 0.072$), as is the risk for reduced personal accomplishment (OR = 5.52, p =

0.053). This observation is congruent with studies in other healthcare contexts which establish smoking as a powerful, albeit infrequent, risk factor for burnout among nurses [9]. The disproportionate risk borne by this small subset of staff underscores the importance of integrating targeted cessation support within broader staff wellness programs, rather than assuming overall low prevalence mitigates organizational responsibility. Collectively, these findings demonstrate that occupational burnout among nurses at KNH is intricately tied to sociodemographic and lifestyle characteristics, which interact in complex ways with workplace culture, societal expectations, and individual health behaviors. Addressing these factors requires nuanced, intersectional strategies that move beyond generalized assumptions to embrace the lived realities of a diverse workforce.

4.2. Key Individual Level Correlates and Their Impact on Burnout

Male nurses are significantly less likely to experience emotional exhaustion (OR = 0.402, p = 0.003). However, sex does not significantly predict cynicism (OR = 0.939, p = 0.821), as well as personal achievement (OR = 0.657, p = 0.136). Nevertheless, it is crucial to create gender-specific stress management programs within health care organizations, such as gender-sensitive workshops tailored to the specific stressors faced by men and women. Karakcheyeva and the co-authors [21] gave an example that men might benefit from programs that address work-related pressures, while women might need support with balancing work and family responsibilities. Among other gender-specific wellbeing programs, for example, consider pairing gender-specific counselors with employees to enhance comfort and relatability, or consider providing access to mental health resources and ensuring they address gender-specific issues, such as societal expectations of masculinity or the double burden of work and home responsibilities for women.

Age appears to have no substantial effect on any of the outcome variables (emotional exhaustion, cynicism, and personal achievement). Nevertheless, when comparing the odds of nurses under 41 years with those above 41 years old (OR = 1.2), this highlights the probability of older nurses being at risk of burnout. Our findings are not compatible with a study by Ang and the joint authors [9], which found that senior nurses are less likely than younger nurses to experience burnout. Their findings may have a positive connotation since higher ages are probably linked to longer work histories, which may result in more effective coping strategies for the pressures of the workplace. Generally, younger nurses have challenges adjusting to the demanding nature of nursing, building confidence and competence, or managing work-life balance. Therefore, mentorship programs such as pairing younger nurses with experienced mentors who can provide guidance, support, and practical advice, or offering training programs to enhance skills and knowledge, to help younger nurses build confidence in their roles, are some of the coping strategies against burnout [27].

An analysis of education levels revealed that they do not significantly predict emotional exhaustion, cynicism, or personal achievement. However, married in-

dividuals are significantly more likely to experience emotional exhaustion (OR = 2.305, p = 0.015), a significant increase in cynicism (OR = 2.687, p = 0.002), and show a near-significant effect on personal achievement (OR = 1.845, p = 0.057). These results indicate a broader impact on burnout and achievement. The study conducted by Temel and co-writers [22] presents conflicting findings, suggesting that burnout is more prevalent among unmarried nurses compared to those who are married. These studies suggest that married individuals may benefit from the support system that surrounds them. In contrast, our own research aligns with the study by Chen and the co-authors [28] on the effects of marriage, which found that being married is associated with an increased risk of burnout.

Additionally, joint authors with Chen [28] discovered a positive correlation between marriage and higher levels of burnout. The research perceives that addressing the specific needs of married nurses through targeted interventions (such as flexible scheduling and family-friendly policies) can significantly reduce burnout and enhance their overall well-being. By providing flexible scheduling, family-friendly policies, emotional and social support, a supportive workplace environment, professional development opportunities, health and wellness programs, and inclusive communication, healthcare organizations can create a more supportive and sustainable work environment for married nurses. These interventions will not only improve the quality of life for married healthcare workers but also contribute to better patient care and overall workplace morale [7].

The study's prediction on religion and emotional exhaustion revealed a non-significant relationship. Nevertheless, being of Muslim religion significantly increases cynicism (OR = 7.116, p = 0.000) and also being a Muslim is significantly associated with decreased personal achievement (OR = 0.301, p = 0.012). These suggest that religious affiliation affects these outcomes differently. Religion can play a significant role in the lives of many nurses, providing them with a source of comfort, community, and strength. However, the demanding nature of the nursing profession can sometimes lead to conflicts between work schedules and religious practices, potentially contributing to burnout. Implementing targeted interventions that respect and accommodate the religious needs of nurses can help alleviate burnout and promote overall well-being [11]. Flexible scheduling, spiritual support services, cultural and religious sensitivity training, support networks, inclusive policy development, ethical and moral support, and holistic wellness programs are all effective strategies to reduce burnout among nurses.

Analysis of income shows non-significant trends across different income brackets with emotional exhaustion. However, results on cynicism and income show mixed effects, with lower income showing a trend towards higher cynicism. While mixed effects have also been revealed with the personal achievement dimension, higher income levels show some non-significant trends towards better personal achievement. Agata and colleagues [9] suggest that to prevent varying effects of burnout score for cynicism and personal achievement, addressing income-related issues through targeted interventions can significantly reduce burnout among nurses.

Organizations should strive to ensure competitive salaries, offer financial incentives, manage overtime fairly, provide career development opportunities, support work-life balance, offer financial planning and support services, and provide comprehensive benefits. By doing so, healthcare organizations can create a more supportive and financially stable environment for nurses.

The social habit of alcohol consumption does not significantly impact any of the outcomes (emotional exhaustion, cynicism, and personal achievement). However, an increased odds of experiencing emotional exhaustion (OR = 5.266, p = 0.072) and personal achievements (OR = 5.524, p = 0.053) are noted within nurses with smoking habits, indicating it is a risk factor for burnout but not for the cynicism dimension. Data collected on the physical exercise habit reveal regular exercise to be a significant protective factor for emotional exhaustion (OR = 0.158, p < 0.000), and show near-significant protective effects for cynicism (OR = 0.596, p = 0.058) as well as near-protective effects of personal achievement (OR = 0.596, p = 0.053). These findings highlight its importance in managing burnout and improving personal outcomes. These findings can guide further research or interventions aimed at understanding and mitigating burnout in various occupational health settings. The statistically significant predictors warrant particular attention for potential organizational interventions to be addressed among employees.

5. Conclusions

The present research found that gender, marital status, religious affiliation, smoking, and exercise significantly affected professional burnout among Kenyatta National Hospital nurses, but age and income had less impact. These results emphasise the need for evidence-based, contextually appropriate healthcare burnout prevention measures. Hospital managers should provide gender-responsive stress management training, a flexible schedule for married personnel, and culturally sensitive spiritual support. Additionally, occupational wellness programs like regular exercise and smoking cessation should be prioritised to prevent emotional tiredness and lower personal accomplishment [22].

The Ministry of Health should mandate hospital psychological support systems, allocate resources fairly to decrease burden, and include burnout evaluations in occupational health policy. Burnout is multidimensional; thus, hospital leadership should be aware of the need for proactive, data-driven interventions. This study used a cross-sectional design, so longitudinal and intervention-based methods are recommended for future research to examine causal relationships, organisational reforms, and workplace interventions' long-term effects [27]-[29]. Qualitative investigations are needed to capture complex lived experiences and uncover context-specific risk and resilience elements. These activities will promote holistic nurse well-being and healthcare delivery in Kenya and elsewhere.

Author Contributions

M. A. J. and G. K. designed the study. G. K. and O. K. were involved in the plan-

ning and supervised the work. M. A. J. performed the data collection, analysis, and drafted the original manuscript. M. A. J. and G. K. aided in interpreting the results and worked on the manuscript. All authors discussed the results and commented on the manuscript.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author (M. A. J.) on reasonable request.

Disclaimer

The views and opinions of this article are the product of professional research and are those of the authors. They do not necessarily reflect the position of any affiliated institution, funder and or that of the publisher. The authors are responsible for this article's results, findings and content.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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