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# Evaluating the impact of financial worry on mental health: a cross-sectional study among Kenyan radiographers

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## Abstract

**Background** Psychological distress is a major public health concern that has many influencing factors. One of them is the financial capability of an individual. Despite the integral role of radiographers in healthcare delivery, there is limited literature about radiographers in Kenya and more so regarding their mental well-being. A descriptive cross-sectional study was conducted to evaluate the effect of perceived financial worry on mental health among Kenyan radiographers.

**Methods** Data was collected from registered radiographers in Kenya through an online survey conducted between December 2023 and January 2024. Multivariable binary logistic regression was used to evaluate the association between financial worry and psychological distress.

**Results** Out of the 2055 radiographers invited to participate in the survey, 245 responded (11.92% response rate). The gender distribution of the respondents was 39.2% female and 60.8% male, closely mirroring the latest data on registered radiographers (37.3% female and 62.7% male). Most respondents in our study were under 30 years old (56.7%). The majority of radiographers (62.4%) reported poor social support. Additionally, most radiographers experienced some level of financial concern across various issues, with an average financial worry score of 16.75 (standard deviation: 4.97; minimum 3, maximum 24). A significant proportion (36.7%) also showed signs of psychological distress. Individuals with higher levels of financial worry were noted to be more likely to experience psychological distress after adjusting for the socioeconomic and health-related variables (adjusted odds ratio, AOR 1.20, 95% confidence interval, CI 1.10–1.31,  $p < 0.001$ ). Furthermore, individuals with at least moderate social support (AOR: 0.39; 95% CI 0.18–0.86,  $p = 0.019$ ) and larger families (AOR: 0.11; 95% CI 0.02–0.78,  $p = 0.027$ ) were less likely to experience psychological distress compared to their peers.

**Conclusions** A significant number of radiographers reported experiencing financial worry which was associated with an increased likelihood of psychological distress. This emphasizes the need for policies and mechanisms to address financial worry and psychological distress to have a more resilient medical workforce in Kenya.

**Keywords** Financial worry, Psychological distress, Mental health, Social support, Kenya, Radiographers

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## Background

Psychological distress refers to a wide range of symptoms that can include depression, general anxiety, personality traits, functional disabilities, as well as behavioural problems [1]. Various psychological, biological, and social factors influence the vulnerability of an individual to mental health issues. Personal traits like emotional skills, and genetics, alongside exposure to negative conditions like poverty and violence, increase the likelihood of developing mental health problems. However, protective factors like having strong social skills and community support can enhance resilience against mental health conditions [2].

Individual financial well-being is a crucial driver of mental stability and well-being. Financial struggles increase the likelihood of experiencing psychological distress [3]. Although the definition of financial strain may vary across different situations, the observed patterns are clear: greater financial strain is associated with poorer mental health outcomes in society [4]. Individuals with self-reported financial worry have higher odds of experiencing psychological distress compared to their counterparts [5].

Financial well-being is a subjective perception of an individual's ability to maintain current and future desired living standards and financial freedom. This concept is thus more individualistic, as it is based on personal perceptions rather than objective measures. Thus, only individuals can accurately assess their financial strain level, assessments can vary significantly even among those with similar financial situations [6]. People with the same income will experience different levels of financial strain due to differing demands on their income for necessities such as food, healthcare, transportation, or housing [7].

Worry is a group of uncontrollable negative thoughts or images [8]. When an individual perceives that they are undergoing through financial strain or hardship the resulting emotional response is referred to as financial stress or financial worry [9]. People who perceive that they do not have enough financial resources or assets are likely to experience financial worry [10]. Financial worry therefore involves repetitive negative thoughts about the uncertainty of one's future financial situation [11].

One of the recent significant contributors to financial constraints and economic instability in many parts of the world is the consequences of the Coronavirus disease 2019 (COVID-19) pandemic. According to the International Monetary Fund (IMF), global inflation rose to 7.5% in August 2022, a substantial rise from the 2.1% average in the ten years before the pandemic [12]. Kenya was not spared, experiencing high inflation in 2022, with overall inflation averaging 8.7% between June 2022 and June 2023. The inflation in the country reached a peak of 9.6% in October 2022 – the highest recorded since 2017. This

inflation led to an increase in prices of essential commodities like food, transport, and energy which is way above individuals' income growth [13].

In addition to the effects of COVID-19, the increased cost of essential commodities in Kenya can be attributed to both global and domestic factors. Domestically, the prolonged drought in 2022 disrupted the food supply, leading to increased dependence on imported goods. Furthermore, the depreciation of the Kenyan currency against major trading currencies contributed to higher import prices for food, fuel, and fertilizer commodities. Meanwhile, the Russian-Ukrainian conflict disrupted the supply of grains, oil for cooking, energy, and fertilizers globally, putting Kenya's dependence on imports from these areas at risk. Finally, there has been a significant increase in global oil prices, which has also impacted local prices. Petroleum products constitute the primary source of fuel in the country [13].

When inflation occurs, it significantly and negatively affects the community's purchasing power, causing it to decrease [14]. An analysis covering 159 developing nations highlighted that rapid increases in commodity prices have severe and immediate effects on the poorest families. These unprecedented price hikes make it impossible for many people to afford the same food they could just a day earlier, emphasizing the need for prompt and effective solutions to mitigate inflation [15].

In numerous developing nations, the issue of mental health is not given a lot of attention leading to continued neglect. Most developing countries dedicate less than 2% of government health budgets to mental health care [16]. In Kenya for instance, mental healthcare has historically been overlooked in health reforms, remaining a low priority in terms of policy and budget considerations [17]. Allocating resources for mental health services in Kenya is challenging due to competing health priorities. These include infectious diseases such as HIV/AIDS and malaria, and issues like malnutrition and unsafe drinking water, alongside rising rates of chronic diseases such as diabetes, cardiac disease, and renal conditions [18].

A survey on mental health in Nigeria highlighted a lack of awareness regarding mental health, with the majority of respondents being unaware of what mental health problems are and the various types of mental health conditions. A significant number of respondents said they would seek spiritual interventions (18%) or traditional medicine healers (8%) if someone had mental health problems [19]. The Nigerian government's support and services for mental health were also reported to be inadequate, with low levels of financial and human resources devoted to mental health [20].

Despite radiographers' important role in patient care, there is little research on radiographers in Kenya and even less on the mental well-being of Kenyan

radiographers. Most of the studies that have been done are on the mental well-being of other health professionals, primarily nurses and doctors [21–23]. This study therefore intended to investigate the mental health of Kenyan radiographers and its possible connection with financial strain and worry.

Our study is significant for several reasons: First, it aims to gather ground-breaking information on an under-researched but important topic. The findings will help to understand the current situation. Secondly, the study's findings and recommendations will enable policy-makers to make evidence-based decisions and policies to improve the well-being of radiographers, both in terms of their financial situation and their mental health. Finally, the study could be extended to other healthcare professionals in the future to provide a broader view of the mental health and financial situation of different healthcare professionals, which could lead to the implementation of interventions across the medical field.

## Methods

### Study design

A cross-sectional survey was conducted in Kenya, an East African country, from December 2023 to January 2024. The target population was all registered radiographers under the Society of Radiographers in Kenya (SORK) ( $n=2055$ ). The link to the online survey was sent through the SORK's official communication channels. Participation was voluntary, and only those who consented could take part in the study.

An ethical approval was given by the National Commission for Science, Technology, and Innovation of Kenya (NACOSTI) for the study to be conducted (License No: NACOSTI/P/23/31734).

### Data collection tool

Data was collected using a self-administered online questionnaire (Supplement 1). Few questions were developed for this study, the others have already been published as described in detail below. Before starting data collection, a pilot study was done to ensure the clarity and accessibility of the questionnaire.

### Sociodemographic and economic characteristics, health status

The initial section of the questionnaire assessed respondents' sociodemographic and economic characteristics in accordance with a study done in the USA [24]. A few modifications were made to make the questionnaire more relevant to the Kenyan setting: individual income, number of household members, and whether participants had loans were added. Participants' ratings of their mental health, personal financial status, and national economy status over the previous three years were introduced to

establish a baseline for the current status. They indicated whether they perceived these factors as getting better, remaining the same, or getting worse over the specified period.

Age was evaluated as a continuous variable, with respondents providing their age in years. Gender was recorded as a categorical variable, with options including male, female, and others. Marital status was captured with categories of single, married, cohabiting, and widowed/divorced. The number of household members and the number of children under 18 in the household were continuous variables representing the count of individuals within these groups.

The region of residence was classified into eight regions as per the former administrative provinces in Kenya: Nairobi, Central, Eastern, Rift Valley, North Eastern, Coast, Nyanza, and Western regions. Employment status was categorized as unemployed, government-employed, or employed in private organizations.

Individuals' monthly income was categorized into the following income brackets in Kenyan shillings (Ksh) (1 United States of America dollar (USD) equivalent to 128.5 Ksh): below 20,000 Ksh; 20,000–35,000 Ksh; 35,001–50,000 Ksh; 50,001–65,000 Ksh; 65,001–80,000 Ksh; 80,001–95,000 Ksh; 95,001–110,000 Ksh; 110,001–125,000 Ksh; and above 125,000 Ksh. Household monthly income was categorized into ranges in Kenyan shillings: below 50,000 Ksh; 50,001 to 100,000 Ksh; 100,001 to 150,000 Ksh; 150,001 to 200,000 Ksh; 200,001 to 250,000 Ksh; 250,001 to 300,000 Ksh; 300,001 to 350,000 Ksh; and above 350,000 Ksh.

Homeownership status was classified into those who own homes and those who rent houses. Existing loans were categorized as yes or no, indicating whether participants had loans or not. Self-reported health status was categorized as very good, good, fair, bad, and very bad.

### Social support

Social support was evaluated using the validated Oslo Social Support Scale (OSSS-3), which is a brief self-reported questionnaire designed to assess the perceived level of social support an individual receives. It consists of three items that focus on: the number of people the respondent feels close enough that they can get help in the case of great personal problems with categories of none, 1–2, 3–5, and 5 or more; the concern or interest shown by others on what the person does, categorized into none, little, uncertain, some, and a lot; and the perceived ease of obtaining practical help if needed from neighbours, categorized into very difficult, difficult, possible, easy, and very easy. The total score ranges from 3 to 14, with the scale categorized into three levels: poor (3–8), moderate (9–11), and strong support (12–14) [25].

### Financial worry

Financial worry is a relatively measurable subjective issue and varies from person to person depending on their attitude and belief about their financial ability [26]. The financial worry assessment tool used a four-point Likert scale with eight questions to measure respondents' levels of current worry across various daily aspects. Participants were evaluated on eight areas of financial worry which included: not having enough money for retirement, inability to cover medical expenses for severe illnesses or accidents, difficulty in maintaining the current standard of living, financial strain for everyday healthcare costs, struggles with monthly bill payments, challenges in meeting housing costs [rent, mortgage], concerns about affording tuition fees, and the inability to repay loans and debts. There were four response categories: "not worried at all", "not too worried", "moderately worried" and "very worried" which were each assigned scores of 0, 1, 2, and 3, respectively. The total scores ranged from 0 to 24, and higher values indicated more worry [26].

### Psychological distress

The validated Kessler Six (K-6) screening scale was used to evaluate psychological distress. The K-6 scale is a population-based screening measure for psychological distress which was initially used in the United States National Health Interview Survey [27]. The tool has demonstrated excellent internal consistency and reliability over the years [28]. The K-6 scale involves respondents reflecting on their experiences over 30 days and rating the frequency of feelings related to nervousness, hopelessness, restlessness, inability to find cheer, perceiving everything as an effort, and worthlessness. On a 5-point Likert scale, responses ranged from "none of the time" to "all of the time" corresponding to a value of 0 to 4. The total score ranges from 0 to 24, people with an overall K-6 score of 13 or greater are classified as going through psychological distress [5, 28].

### Data analysis

Data analysis was done using Statistical Package for Social Sciences (SPSS) Version 25 (IBM Corp, Armonk, NY, United States). The initial phase of the analysis involved conducting a descriptive analysis to get an overview of the respondents' characteristics, chi-square test was used to compare proportions in the prevalence of psychological distress across different categories.

In the second stage, we examined whether there is an association between financial worry as an independent variable and psychological distress as a dependent variable by conducting binary logistic regression. Finally, we examined the effect of demographic and socioeconomic factors on the relationship between financial worry and psychological distress, through a multivariable binary

logistic regression. The p-value of the goodness of fit test for the multivariable binary regression model was  $>0.05$  while the Variance Inflation Factor (VIF) scores were  $<10$  for all variables, indicating the model fits the data and multicollinearity was not a concern respectively. The multivariable binary logistic regression results are presented as adjusted odds ratios (AOR) with p-values and 95% confidence intervals (95% CI). A p-value of less than 0.05 was regarded as statistically significant in all analyses.

## Results

### Participants' sociodemographic, economic characteristics and health status

A total of 245 radiographers participated in the study (11.9% response rate). Our study is representative of the actual population in terms of gender because, according to the latest data, the gender distribution of registered radiographers is 37.3% female and 62.7% male, which closely matches the survey data we received, showing 39.2% female and 60.8% male. The age distribution was 56.7% for those below 30 years, 38.0% for 30–45 years, and 5.3% for those above 45 years (Table 1).

Nearly half of the respondents were single and lived in a household with less than 5 members, more than one-quarter had no children. The majority of the participants lived in the Nairobi region and employed in private health care. More than half of them earned monthly less than 65,000 Ksh and the household monthly income was below 100,000 Ksh for nearly 60% of them. Less than one-fifth of them owned their home, two-thirds of them had a loan. More than 90% felt the national economy status worse over the last three years, and nearly half of them felt the same about their financial status (Table 1).

In terms of health status, the majority (80.4%) of respondents rated their health as (very) good. More than two-fifth of respondents felt that their mental health is deteriorating and nearly two-third had only poor social support (Table 1).

### Psychological distress

The average K-6 score of the participants was 10.96 (SD: 4.99; minimum 0; maximum 24). Among the respondents, 63.3% ( $n=155$ ) were noted to experience no psychological distress (K-6 score below 13), whereas 36.7% ( $n=90$ ) had signs of psychological distress (K-6 score 13 or above).

Table 2 provides an overview of participants' psychological distress indicators reported over the past 30 days among respondents.

Psychological distress was more common among lower monthly income earners (below Ksh 65,000), those with poor self-rated health status, with worsening financial

**Table 1** Participants' sociodemographic, economic characteristics and health status based on the presence of psychological distress

Characteristics		Psychological distress		Total n(%)	p-value
		No distress n(%)	Distress n(%)		
Age	< 30 years	81 (52.2%)	58 (64.4%)	139 (56.7%)	0.152
	30–45 years	64 (41.3%)	29 (32.3%)	93 (38.0%)	
	45+ years	10 (6.5%)	3 (3.3%)	13 (5.3%)	
Gender	Female	54 (34.8%)	42 (46.7%)	96 (39.2%)	0.068
	Male	101 (65.2%)	48 (53.3%)	149 (60.8%)	
Marital status	Single	76 (49.0%)	47 (52.2%)	123 (50.2%)	0.868
	Married	76 (49.0%)	41 (45.6%)	117 (47.8%)	
	Divorced/Widowed	3 (2.0%)	2 (2.2%)	5 (2.0%)	
Homeownership	Rented	124 (80.0%)	79 (87.8%)	203 (82.9%)	0.119
	Own home	31 (20.0%)	11 (12.2%)	42 (17.1%)	
Household members	Less than 5	77 (49.7%)	50 (55.6%)	127 (51.8%)	0.230
	5–8	67 (43.2%)	38 (42.2%)	105 (42.9%)	
	9+	11 (7.1%)	2 (2.2%)	13 (5.3%)	
Children under 18 years	No children	46 (29.6%)	24 (26.6%)	70 (28.6%)	0.580
	1–3 children	103 (66.5%)	60 (66.7%)	163 (66.5%)	
	Above 3 children	6 (3.9%)	6 (6.7%)	12 (4.9%)	
Region of residence	Nairobi	67 (43.3%)	42 (46.7%)	109 (44.5%)	0.886
	Central	28 (18.1%)	13 (14.4%)	41 (16.7%)	
	Eastern	9 (5.8%)	5 (5.6%)	14 (5.7%)	
	North Eastern	5 (3.2%)	2 (2.2%)	7 (2.9%)	
	Coast	7 (4.5%)	7 (7.8%)	14 (5.7%)	
	Rift Valley	16 (10.3%)	11 (12.2%)	27 (11.0%)	
	Western	7 (4.5%)	2 (2.2%)	9 (3.7%)	
	Nyanza	16 (10.3%)	8 (8.9%)	24 (9.8%)	
Employment status	Not employed	14 (9.0%)	13 (14.4%)	27 (11.0%)	0.425
	Private employed	96 (62.0%)	53 (58.9%)	149 (60.8%)	
	Government employed	45 (29.0%)	24 (26.7%)	69 (28.2%)	
Monthly income in Kenyan shillings	Less than 65,000	72 (46.5%)	57 (63.3%)	129 (52.7%)	<b>0.037</b>
	65,000–110,000	55 (35.5%)	23 (25.6%)	78 (31.8%)	
	Above 110,000	28 (18.0%)	10 (11.1%)	38 (15.5%)	
Household monthly income in Kenyan shillings	Below 100,000	85 (54.9%)	58 (64.4%)	143 (58.4%)	0.095
	100,000–200,000	43 (27.7%)	25 (27.8%)	68 (27.8%)	
	Above 200,000	27 (17.4%)	7 (7.8%)	34 (13.8%)	
Health status	(Very) bad & fair	20 (12.9%)	28 (31.1%)	48 (19.6%)	<b>&lt; 0.001</b>
	(Very) good	135 (87.1%)	62 (68.9%)	197 (80.4%)	
Loan	Yes	104 (67.1%)	62 (68.9%)	166 (67.8%)	0.772
	No	51 (32.9%)	28 (31.1%)	79 (32.2%)	
National economy status over past three years	Worse	144 (92.9%)	86 (95.6%)	230 (93.9%)	0.373
	Same	9 (5.8%)	2 (2.2%)	11 (4.5%)	
	Better	2 (1.3%)	2 (2.2%)	4 (1.6%)	
Financial status over past three years	Worse	65 (41.9%)	52 (57.8%)	117 (47.8%)	<b>0.047</b>
	Same	44 (28.4%)	21 (23.3%)	65 (26.5%)	
	Better	46 (29.7%)	17 (18.9%)	63 (25.7%)	
Mental health status over past three years	Worse	46 (29.7%)	60 (66.6%)	106 (43.3%)	<b>&lt; 0.001</b>
	Same	76 (49.0%)	24 (26.7%)	100 (40.8%)	
	Better	33 (21.3%)	6 (6.7%)	39 (15.9%)	
Social support	Poor	81 (52.3%)	72 (80.0%)	153 (62.5%)	<b>&lt; 0.001</b>
	Moderate and strong	74 (47.7%)	18 (20.0%)	92 (37.5%)	

**Table 2** Participants' psychological distress indicators over the last 30 days

	None all the time n (%)	A little of the time n (%)	Some of the time n (%)	Most of the time n (%)	All the time n (%)
Nervous	10 (4.08%)	45 (18.37%)	107 (43.67%)	73 (29.80%)	10 (4.08%)
Hopeless	34 (13.88%)	65 (26.53%)	93 (37.96%)	42 (17.14%)	11 (4.49%)
Restless	22 (8.98%)	57 (23.27%)	105 (42.86%)	50 (20.41%)	11 (4.48%)
Depressed	45 (18.37%)	64 (26.12%)	86 (35.10%)	40 (16.33%)	10 (4.08%)
Everything is an effort	16 (6.53%)	45 (18.37%)	83 (33.88%)	62 (25.31%)	39 (15.91%)
Worthless	82 (33.47%)	52 (21.22%)	67 (27.35%)	26 (10.61%)	18 (7.35%)

**Table 3** Participants' financial worry regarding various issues

	Not worried at all n (%)	Not too worried n (%)	Moderately worried n (%)	Very worried n (%)
Retirement	14 (5.71%)	26 (10.61%)	110 (44.90%)	95 (38.78%)
Medical costs of a serious illness or accident	7 (2.86%)	20 (8.16%)	89 (36.33%)	129 (52.65%)
Maintain the standard of living	9 (3.67%)	45 (18.37%)	116 (47.35%)	75 (30.61%)
Everyday healthcare	8 (3.27%)	47 (19.18%)	107 (43.67%)	83 (33.88%)
Pay monthly bills	10 (4.08%)	57 (23.27%)	109 (44.49%)	69 (28.16%)
Rent, mortgage, other housing costs	23 (9.39%)	49 (20.00%)	99 (40.41%)	74 (30.20%)
Tuition fee	16 (6.53%)	38 (15.51%)	91 (37.14%)	100 (40.82%)
Pay loans	18 (7.35%)	47 (19.18%)	83 (33.88%)	97 (39.59%)

and mental health status, and with poor social support (Table 1).

**Financial worry**

The mean financial worry score was 16.75 (standard deviation, SD: 4.97; minimum 3, maximum 24). Table 3 shows the distribution of worry regarding various financial issues.

**The association between financial worry and psychological distress**

A significant positive association between higher levels of financial worry and psychological distress was noted (odds ratio, OR: 1.21; 95% confidence interval, CI: 1.14–1.30; *p*-value < 0.001). After adjusting for the socio-economic and health-related variables, the odds of psychological distress were still above 1 (adjusted odds ratio,

**Table 4** Relationship between financial worry and psychological distress

Variables	Categories	AOR	95% CI		<i>p</i> -value
			lower	upper	
Financial worry		<b>1.20</b>	<b>1.10</b>	<b>1.31</b>	<b>&lt; 0.001</b>
Social support (ref.: poor)	Moderate and strong	<b>0.39</b>	<b>0.18</b>	<b>0.86</b>	<b>0.019</b>
Age (ref.: ≤ 30 years)	30–45 years	0.73	0.26	2.01	0.540
	45 + years	1.22	0.13	11.67	0.862
Gender (ref.: female)	Male	0.71	0.33	1.50	0.378
Household members (ref.: ≤ 5)	5–8	0.68	0.32	1.48	0.333
	9 or above	<b>0.11</b>	<b>0.02</b>	<b>0.78</b>	<b>0.027</b>
Employment status (ref.: unemployed)	Private employed	0.68	0.22	2.17	0.520
	Government employed	1.21	0.30	4.81	0.788
Monthly income in Ksh (ref.: < 65,000)	65,000–100,000	0.45	0.20	1.05	0.064
	100,000+	0.70	0.16	2.99	0.630
Self-rated health status (ref.: very bad and fair)	Good and very good	0.66	0.42	1.02	0.061
Loan (ref: yes)	No	1.26	0.55	2.90	0.581
National economic status (ref: getting worse)	Same	0.90	0.12	6.66	0.916
	Better	<b>17.61</b>	<b>1.45</b>	<b>213.98</b>	<b>0.024</b>

AOR: adjusted odds ratio, odds ratio controlled for the region of residence, participant's rating of their mental health over the last three years, participants' rating of their financial status over the last three years, homeownership, household income, marital status, number of household children under 18; CI: confidence interval; ref.: reference category; Ksh: Kenyan shilling

All significant results are in bold.

AOR: 1.20; 95% CI: 1.10–1.31; *p*-value < 0.001). The likelihood of psychological distress was significantly higher among participants who rated the national economic status as having improved over the last three years before the study as compared to those who rated it as getting worse. However, having participants with substantial social support and living in a large family had a reduced likelihood of experiencing psychological distress. No significant associations were observed for the other variables examined (Table 4).

**Discussion**

Our study found an association between financial worry and psychological distress among radiographers in Kenya. Individuals experiencing higher levels of financial worry were more likely to suffer from psychological distress compared to those experiencing lower levels of financial worry. The constant concern and worry over meeting various financial needs can have a significant negative impact on mental well-being.

Similar findings have been echoed in other studies exploring the relationship between financial strain and mental well-being [5, 24, 26]. For instance, a study

conducted in Ontario, Canada, examining the effects of debt stress on mental well-being, concluded that there is a significant positive correlation between debt stress and psychological distress [29]. Similarly, in Cyprus, a study emphasized financial hardship as a significant risk factor for major depression throughout one's life [30]. Moreover, chronic financial strain is noted to contribute to elevated levels of depressive symptoms in later years [31]. This connection is also evident in studies evaluating specific financial stressors such as mortgage or housing concerns and employment insecurity. For instance, in Western Sydney, parents were found to experience psychological distress closely linked to financial challenges, notably regarding mortgage or housing and employment stability [32]. Overall, a significant association exists between financial hardship and an increased risk of mental health problems [33] which cannot be ignored.

Based on our results, there is an association between individual monthly income and psychological distress. It was also found that perceptions of an individual's financial well-being over the past three years were also related to psychological distress. It is well documented that people living in poverty or those with low-income earning groups are more likely to experience psychological distress compared to those who have higher incomes [34]. Lower socioeconomic status is associated with elevated psychological distress [35]. Low socioeconomic status affects mental illness rates both directly and indirectly by influencing economic hardship in low and middle-income groups [36]. However, these associations disappeared in the multivariable analysis.

An unexpected finding reveals that individuals who perceive that the national economy is getting better showed a higher likelihood of experiencing psychological distress compared to individuals who perceive that the economy is getting worse. This may be because the overall improvement does not necessarily mean an improvement at the individual level, they may still be dealing with the personal consequences of the previous decline, they may not feel any improvement in their situation, or they may be worried about a possible future downturn. All of this can lead to higher levels of psychological distress.

The presence of underlying medical conditions not only triggers stress and discomfort but also subjects individuals to financial strain and persistent concern owing to the recurring expenses associated with medications and medical treatment. Better physical health decreases the likelihood of having psychological distress [37]. According to a study undertaken among adults in the United States of America, individuals who reported better health experienced lower levels of psychological distress in contrast to those who perceived their health as poor [24]. But in our study, we have not found a statistically significant association between self-perceived health and

psychological distress after adjusting for other variables. This may be partly due to the relatively high prevalence of (very) good health status.

An individual perception regarding their mental health status over the previous period was also noted to be associated with psychological distress, but this was not observed in the multivariable analysis. Being exposed to more stressful events and reporting consistently high levels of perceived stress over time are associated with poorer mental health and increased mortality [38]. When individuals perceive that they are stressed, it significantly contributes to depression and harmful behaviours such as substance abuse [39].

Another key finding from our study emphasized the significant role played by social support in managing psychological distress. Individuals with substantial social support exhibited less likelihood of experiencing psychological distress compared to those with poor social support. Moreover, participants from larger households showed lower chances of experiencing psychological distress compared to those from smaller households. Social support includes emotional, instrumental, and informational forms, all of which enhance mental well-being and reduce negative mental health consequences by addressing various human needs [40]. Social support from family, friends, and significant others is negatively associated with perceived stress, suggesting that such support reduces perceived stress [41]. Family and social support provide a platform for individuals to share their worries, serving as a form of therapeutic intervention. Conversations and support from others have been shown to positively impact mental well-being [42]. Moreover, the stress and coping theory argues that social support is an important resource when facing challenges and significantly impacts our stress levels. When we feel supported and capable of coping, our stress tends to decrease [43].

However, our findings did not establish a connection between other sociodemographic factors and psychological distress, contrary to previous studies [5, 24]. This disparity could be attributed to the targeted nature of our study, which specifically focused on radiographers, unlike previous broader studies analyzing the general population. The exclusive focus on this specialised group, which is characterised by a young demographic and high levels of education, may obscure significant differences, making the impact of socioeconomic factors less apparent.

### Strengths and limitations

Our study stands out in its emphasis on financial worry as a determinant of psychological distress among medical professionals, specifically radiographers. Unlike previous research that primarily focused on other determinants of psychological distress among radiographers like workload, burnout, or the impact of events like the COVID-19

pandemic [44, 45], our study sheds light on an underexplored aspect, the impact of financial worry. On the other hand, in contrast to earlier studies [46–48] which mainly focused on the mental well-being of medical doctors and nurses, our study provides valuable insights into a group that has not been studied as much.

The use of an online survey to collect data facilitates widespread and diverse participation, enabling easy access for radiographers across the country, and fostering a diverse sample. The anonymity may encourage honest responses, contributing to the reliability of collected information [49, 50].

While our study provides valuable insights, limitations exist. The study primarily focused on financial worry as a determinant of mental health wellbeing, alongside selected socioeconomic factors as influencing factors. Nevertheless, it's important to acknowledge that mental health is influenced by many other determinants, which our study did not cover [51, 52]. The reliance on online platforms introduces a potential digital divide, excluding individuals with limited internet access or technological proficiency. The World Bank estimates that the average internet connectivity in Kenya was 29% as of 2021 [53]. However, we assume that the percentage is significantly higher among radiographers since they are a highly literate group who mainly work and live in major towns and cities, where internet connectivity is higher. The response rate in the study was low, which increases the likelihood of non-response bias [54, 55]. Finally, online surveys are conducted in the absence of a mediator or interviewer hindering the possibility of clarifying ambiguous responses to the respondents [56].

### Recommendations

Several recommendations can be made from the study: First, providing radiographers with financial education and training should be considered. By equipping radiographers with adequate financial literacy, they can manage their finances better regardless of their income level.

Secondly, it is important to have policies on adjusting salaries according to the current inflation rates. This will ensure the maintenance of purchasing power despite inflation. Inflation reduces the value of money, leading to a decrease in real income if salaries remain stagnant. Simply raising wages to match the cost of living has been shown to improve psychological well-being, regardless of socioeconomic or demographic differences [57].

Thirdly, the study highlights the importance of social support as a sustainable way of safeguarding the mental well-being of radiographers. Building a strong supportive community around radiographers can involve activities such as creating peer support groups, having mental health awareness campaigns, and making access to counselling services more accessible. These will go a long way

to ensure that radiographers have people and systems around them to support them at all times.

Finally, further research is recommended, one key area that could be investigated in the future is the potential negative impact of psychological distress on radiographers' patient care. The well-being of the clinical workforce is not only essential for the professionals, but also has a significant impact on workforce planning, health-care costs and the quality of patient care [58]. A study of hospital consultants in the United Kingdom found that those with poor mental health were more likely to report harmful alcohol use, to be irritable with patients and colleagues, to lower their standards of care, and/or to plan early retirement [59]. This could affect the quality of care patients receive.

### Conclusion

Our study offers a significant look into the financial worry but also mental health status of radiographers in Kenya. The study reemphasizes the negative effect that financial worry has on psychological distress and overall mental wellness. This sends a clear message to the stakeholders and policymakers on the importance of addressing financial well-being for better mental health among radiographers and also to the general public. Additionally, the role of social support in addressing psychological distress highlights the need for a holistic intervention when dealing with the issue.

### Abbreviations

AOR	Adjusted odds ratio
API	Africa Polling Institute
CI	Confidence interval
COVID-19	Coronavirus disease 2019
HIV/AIDS	Human immunodeficiency virus/Acquired immunodeficiency syndrome
IMF	International Monetary Fund
K-6	Kessler Psychological Distress Scale (6-item)
Ksh	Kenyan shilling(s)
n	Count(s)
NACOSTI	National Commission for Science, Technology, and Innovation, Kenya
OR	Odds ratio
OSSS-3	Oslo Social Support Scale (3-item)
ref	Reference category
SD	Standard deviation
SORK	Society of Radiographers in Kenya
SPSS	Statistical Package for Social Sciences
USA	United States of America
USD	United States of America dollar(s)
VIF	Variance Inflation Factor
WHO	World Health Organization

### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12889-024-20863-5>.

Supplementary Material 1

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### Author contributions

NJG wrote the main manuscript text, managed and analyzed data, and prepared all figures and tables. ÉB reviewed the manuscript. All authors contributed to the conception of the work and the interpretation of results, and read and approved the final manuscript.

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### Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

### Declarations

#### Ethics approval and consent to participate

Ethical clearance for this study was granted by the Kenya National Commission for Science, Technology, and Innovation (NACOSTI) under License No: NACOSTI/P/23/31734. Participants provided informed consent, having been informed of the study's objectives.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

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