

# ISRG Journal of Economics, Business & Management (ISRGJEBM)



## ISRG PUBLISHERS

Abbreviated Key Title: Isrg J Econ Bus Manag

ISSN: 2584-0916 (Online)

Journal homepage: <https://isrgpublishers.com/isrgjebm/>

Volume – II Issue - II (March – April) 2024

Frequency: Bimonthly



## Developing Tailored Financial Literacy Programs for Healthcare Professionals: A Comparative Analysis

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| Received: 17.04.2024 | Accepted: 21.04.2024 | Published: 24.04.2024

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### Abstract

Financial education is vital for equipping individuals with the knowledge and skills necessary to make sound financial decisions. This study explores the significance of directing financial education initiatives to enhance four key aspects of financial literacy among healthcare professionals in Kenya: sociodemographic factors, financial knowledge, financial attitude, and financial behavior. After conducting a thorough review of the existing literature, this research utilizes an explanatory research design to explore the complex impact of financial education on healthcare professionals, specifically the doctor demographic, in Kenya. Data is gathered from 392 healthcare professionals. Results indicate that factors such as education level, employment status, and geographical zone showed a noticeable influence. Financial knowledge has been identified as a crucial factor that significantly influences financial literacy, followed by financial attitude and financial behavior. The study emphasizes the importance of integrating financial education into medical training programs and customizing it for different age groups. Developing financial knowledge and promoting positive attitudes can lead to more informed financial behaviors among healthcare workers, ultimately improving financial literacy within the profession. It is recommended to integrate financial education early on, provide tailored interventions addressing specific dimensions of financial literacy, and offer ongoing support to reinforce financial competencies. By focusing on improving financial knowledge, behavior, and literacy, financial education initiatives can help healthcare workers effectively navigate financial challenges, promoting their financial well-being and professional success. Future research should explore the long-term impacts of targeted financial education interventions within the healthcare sector.

**Key Words:** Financial Education, Financial Literacy, Healthcare Professionals, Kenya.

## Introduction

Financial literacy is an invaluable asset to the human capital pool both in and out of the hospital. Finance is a basic requirement in the healthcare profession from a human capital perspective; that is in management as well as in employees' capacities for their financial management (Safarani, Ravaghi, Raeissi, & Maleki, 2018). Financial incapacity is known to harm the overall well-being of individuals as well as work performance (Escribe, et al., 2022). Cawyer (2022) found a positive correlation between financial literacy and a sense of well-being among obstetricians and gynecologists. Money-related stress is linked to severe health issues such as heart disease, diabetes, sleep disorders, and depression, leading to costly medical treatments. A poor sense of well-being has been shown to translate to worse patient outcomes (Escribe, et al., 2022).

In the last decade, organizations have had an increased drive to improve management (Singh, Rani, & Kiran, 2020). Healthcare professionals are best suited to take up these managerial positions in the health sector because they have expert knowledge in the field. However, finance is not incorporated into the training curriculum from the undergraduate level right through to graduate training and beyond. This brings with it the need for financial training to be incorporated as part of the medical curriculum (Millen & Stacey, 2022). Despite their advanced education, medical professionals in the United States often exhibit limited financial literacy (McMillon & Bryant, 2022). Studies have revealed that even qualified healthcare professionals at prominent medical institutions have high levels of credit card debt, insufficient retirement savings, and a lack of basic financial knowledge. Additionally, medical professionals often carry substantial student debt burdens, compounding their financial challenges (Jayakumar, Larkin, Ginzberg, & Pate, 2017).

The repercussions of inadequate financial literacy among healthcare professionals are extensive and intricately linked to the healthcare landscape (Agarwal & Biswas, 2022). Firstly, this knowledge gap results in suboptimal financial decision-making, potentially leading to overspending, insufficient savings, and the accrual of excessive debt (Cashin et al., 2017). Such financial challenges can impede the attainment of crucial healthcare objectives (Aguirre-Bielschowsky et al., 2018). Moreover, susceptibility to financial fraud, arising from a lack of comprehension of financial concepts, poses a risk not only to individual finances but also to the security of sensitive patient data (Payne et al., 2020). For healthcare workers in Kenya, operating in challenging conditions with frequent salary delays, these financial hurdles can hinder their access to healthcare services and perpetuate a cycle of financial instability (Millen & Stacey, 2022). This research aimed to comprehensively investigate the determinants of financial literacy among healthcare professionals in Kenya. The purpose was to shed light on the current state of financial literacy within the healthcare sector and its implications for individual healthcare professionals. By addressing this knowledge gap, the study sought to provide valuable insights that inform tailored interventions, policy reforms, and educational initiatives aimed at enhancing financial literacy among healthcare professionals.

## Literature Review

### Financial Education

Globally many governments have introduced a mandatory system in place to ensure their workforce saves for the long term and

retirement as a solution for the poor savings practices. These intermediate forms of savings include mandatory public pensions which are only beneficial if one stays employed long-term permanently up until retirement. Here the choice rests on the designers of the model where the employees are not financially literate. In some countries, the intermediated savings model has been replaced with personalized savings plans. Employees with a good background in financial education can apply the knowledge to make appropriate savings and retirement decisions for themselves. However, the less financially knowledgeable are forced to rely on financial advisors who may take advantage of them due to conflicts of interest. Therefore, there is no form of perfect substitute for financial literacy (Michaud, 2017).

The institution of the financial education process is a complex one. It is difficult to establish the appropriate level of knowledge and the decisions such as at what age it should be instituted. The human capital framework focuses on where individuals invest in financial knowledge up to the point where marginal cost equals returns. The disadvantage to this is that financial knowledge is constantly evolving and stagnant knowledge quickly depreciates and becomes outdated and inapplicable. The development model was then to come up with an appropriate level of knowledge as per the education level. The "hump-shaped" path recommends increasing the level of financial education when individuals begin to save and decrease the intensity of financial education once the individuals start to spend the savings accumulated (Atkinson & Messy, 2012; Millen & Stacey, 2022; Lührmann, Serra-Garcia, & Winter, 2018).

Two settings for instituting financial education are the school setting and the workplace setting in the course of employment. The employment setting is usually more complex due to its voluntary nature. School financial education institutes provide more holistic coverage of a cohort as they eliminate the voluntary nature of financial education later in the individual's life cycle. Introduction to financial education in schools and workplaces has been shown to improve the levels of financial literacy. Introduction in the formative years of education has shown sustained long-term benefits (Lührmann, Serra-Garcia, & Winter, 2018; Frisancho, 2018). Financial Education requires twenty to forty hours on average for the acquisition of basic financial knowledge (Kaiser & Menkhoff, 2020).

Vulnerable groups and their financial needs are often masked when taking population averages (Francisco, Francisco, & Carla, 2022; Lusardi, 2019). It is worse among women, those with low education levels, and the older population. Women have also been found to take a reserved approach to financial education (Lusardi, 2019; Lusardi, 2012). Numeracy was shown to decrease significantly with increasing age. This was postulated to be due to lower levels of financial knowledge. Others have postulated this to be due to a decline in cognitive ability among the older population. This population is therefore not able to optimize the financial products available for the age group and a higher outcome of financial mistakes among this population (Lusardi, 2012).

Financial education has been shown to impact financial knowledge more than impact on financial behavior. It has also been shown to have a greater effect on the financial behavior of individuals while they are adolescents as opposed to adults (Kaiser & Menkhoff, 2020). Financial knowledge has also been shown to boost the overall grades of students. There is a positive impact on the parents and teachers of the students receiving financial knowledge

(Frisancho, 2018). Financial education when instituted in the early phases of the life cycle has been shown to have a positive welfare effect as well as an increased consistency in intertemporal choices in youthful individuals (Bover, Hospido, & Villanueva, 2018; Alan & Ertac, 2018; Lührmann, Serra-Garcia, & Winter, 2018). Financial education has been shown to positively impact financial attitudes. The financial attitude then impacts financial management practice which then impacts financial satisfaction (Yap, Komalasari, & Hadiansah, 2018; Lusardi & Mitchell, 2011).

Financial education is often omitted in medical training programs (Connelly & List, 2018). In the USA studies have found lack of financial education in the medical training program negatively impacts personal finances (Connelly & List, 2018). Adetayo, Ford, and Reinhardt (2019) conducted interviews among medical professionals and found that over half of them would have loved to receive financial literacy education during their medical training but did not receive the opportunity. Fifty-four percent of the alumni doctors who had completed their post-graduate studies believed financial training would have been more applicable before the post-graduate training program (Adetayo, Ford, & Reinhardt, 2019).

Healthcare education lacks the inclusion of financial education. Studies have shown that a majority of healthcare practitioners with businesses have had no financial training. Lack of financial education and its concepts are an independent predictor of levels of financial literacy among healthcare workers (Jayakumar, Larkin, Ginzberg, & Patel, 2017; Millen & Stacey, 2022). There is a mismatch in healthcare competency as compared to the demands of the role. The majority of the learning is information-based rather than transformative focus. Healthcare educational curriculums are teacher rather than student-led. The curriculum itself is based on Cognitive learning theories, Behavioral learning theories, and Experimental learning theories. These learning methods limit the knowledge to seek necessary skills for survival outside their field of study due to the passive learning approach (Kauffman, 2019).

Business owners may also lack knowledge in certain areas of finance. Business owners have been found to have higher levels of business-specific financial literacy as compared to general financial literacy concepts. Millen et al (2022) found that despite the business owners in the healthcare profession scoring highly in the business-related financial section. Their overall business-related financial literacy score was lower than their general financial literacy score suggesting general financial knowledge does not ensure business success

## Theoretical Framework

The theory of Financial Literacy has had many definitions over the years. Organization for Economic Co-operation in partnership with the International Network for Financial Education (OECD/INFE) has defined financial literacy as a combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing (Kiril, 2020). Financial literacy is a conceptual model derived from financial knowledge, financial attitude, and financial behavior. It is also influenced by sociodemographic factors. The OECD framework for measuring financial literacy is a harmonized questionnaire that touches on the determinants which include attitude knowledge, behavior, and social-demographic factors. The tool has 21 questions with various sections to cover each determinant (Atkinson & Messy, 2012; Francisco, Francisco, &

Carla, 2022; Kiril, 2020). It was first developed in 2010, modified in 2015, and revised in 2018 for research that was carried out from 2019 to 2020. More recently in 2022 modifications were made to include digital financial products as well as improvement of the other questions. The questionnaire component reflects the definition of financial literacy (OECD, 2022).

The theory of planned behavior pertains to three aspects that indirectly affect behavior intention. This theory suggests that one's intent to carry out different types of behavior can be accurately predicted by examining their attitudes towards behavior, norms, and perceived behavior control. In this theory, behavioral beliefs influence positive and negative attitudes. This in turn influences practices in finance management (Ajzen, The theory of planned behavior, 1991). High levels of all three have been associated with higher tendencies to lean towards financial management practices. Studies done in India have found financial attitudes together with parental socialization and financial literacy influence financial behavior in the young population (Bakar & Bakar, 2020).

Financial Socialization is part of an individual's development where a person's attitudes and behavior are influenced by the exposure, they receive from their caregivers as well as through school financial exposure. These then influence their attitudes and their behavior and ultimately their financial freedom. This is indirectly acquired through observation or directly through intentional coaching. The individual then establishes their perceptions and acquired skills with financial practices. All this has contributed to financial well-being. (Kagotho, Ssewamala, & Patak-Pi, 2018; Ameliawati & Setiyani, 2018). It is a lifelong process that undergoes constant evolution with multifactorial exposure. This can be from peers, parenting figures, Teachers, social media as well as other sources (Mustafa, Mahussin, & Alam, 2020). There is a positive relationship established between financial socialization and the management of personal finances (Myung-Hee, 2019).

## Method and Materials

### Study Design and Setting

The research adopted an explanatory research design to address the aspects of the research problem comprehensively. Explanatory research design is particularly suitable for ascertaining cause-effect relationships where information is limited, serving as a foundation for testable theories (Davidoff, 2019). The study focused on healthcare professionals in Kenya, primarily doctors, within diverse practice settings including public, private, non-profit organizations, and self-employed practitioners.

### Study Participants and Sampling

The population comprised healthcare workers, specifically doctors, registered under the Kenya Medical Practitioner and Dentists Board and Pharmacy and Poisons Board (KMPDC). The total population was 24,113 individuals, with medical doctors and dentists constituting 90.47%, and pharmacists 9.53% (Okoroafor, et al., 2022; Pharmaceutical Society of Kenya, 2023; KMPDC, 2021; Pharmacy and Poisons Board Kenya, 2023). A simple random sampling technique was employed, ensuring each doctor had an equal chance of inclusion. The calculated minimum sample size using Yamane's formula was 392 participants, providing adequate representation.

## Data Collection Methods

A structured questionnaire served as the primary data collection tool for the survey, which was conducted over the period from June to July 2023. This questionnaire, administered through online platforms, featured closed-ended questions to capture quantitative data related to financial literacy scores (Rasinger, 2013). The questions used in the assessment were derived from the OECD/INFE questionnaire and guidance notes for conducting internationally comparable surveys on financial literacy (INFE, 2011; Jennah, 2022; INFE, 2016). The Likert Scale was employed for financial behavior, financial knowledge, and financial attitude questions. After obtaining ethical approvals from the Institutional Review Board (IRB) at the United States International University (USIU) and the research permit from the Kenya National Commission for Science, Technology, and Innovation (NACOSTI), the questionnaire was disseminated to eligible participants. The questionnaire underwent a pilot study to ensure reliability and was validated before distribution. The data collection process included both online and hard copy options, with an emphasis on confidentiality through anonymous identification. Achieving an 86.47% response rate, the analysis focused on 339 completed survey data in an explanatory research framework.

## Some Operational Definitions Used for the Study

**Financial education:** Financial education refers to a structured process of imparting knowledge, skills, and attitudes necessary for individuals to effectively manage their finances, make informed financial decisions, and achieve their financial goals. This process encompasses various topics such as budgeting, saving, investing, debt management, risk management, and financial planning. Financial education aims to equip individuals with the understanding and capabilities to navigate complex financial systems and assess financial products and services. It also includes fostering positive financial behaviors, promoting habits such as saving regularly and making prudent financial decisions aligned with one's financial goals and values.

**Financial knowledge:** Financial knowledge was assessed by examining participants' attitudes and perspectives toward ten financial knowledge questions. This evaluation involved categorizing Likert scale responses into five levels: strongly agree, agree, neutral, disagree, and strongly disagree. The 5-point Likert scale had 5 as strongly agree and 1 as strongly disagree. The "Average Financial Knowledge" was computed by assigning a score of 1 for each correct response and 0 for incorrect responses across the 10 questions measuring financial knowledge. The total score for each participant was converted to a percentage of the maximum achievable score, and the resulting percentages were averaged to provide an overall representation of participants' financial attitudes.

**Financial attitude:** Financial attitude was assessed by examining participants' responses to eight questions associated with spending, borrowing, risk, ethical finance, and saving. Questions had a 5-point Likert scale with 5 as strongly agree and 1 as strongly disagree. The "Average Financial Attitude" was computed by assigning a score of 1 for each correct response and 0 for incorrect responses across the 8 questions measuring financial attitudes. Each participant's total score was transformed into a percentage of the highest possible score attainable. These percentages were then averaged to comprehensively portray participants' financial attitudes.

**Financial behavior:** Financial behavior was assessed by examining participants' responses to ten main questions related to personal financial goals, affordability, and financial plan and management. Questions on saving and tracking income and expenditure had multiple options to ensure inclusivity. This variable was measured by a Likert scale ranging between 5 strongly agree and 1 strongly disagree. The "Average Financial Behavior" was determined by allotting a score of 1 for every accurate response and 0 for incorrect ones across the 15 questions assessing financial behavior. Each participant's total score was then converted into a percentage of the maximum possible score, and these percentages were averaged to present a comprehensive view of participants' financial behavior.

**Financial literacy:** The criteria for classifying respondents into low or high financial literacy groups, as well as the method employed to evaluate financial literacy, were aligned with the scale formulated by (INFE, 2016). Individuals scoring below 16 out of a possible total of 28 in the entire questionnaire were categorized as having low financial literacy. Conversely, those achieving a score of 16 and above were identified as possessing high financial literacy.

**Financial Literacy Index:** It is a composite measure, with its magnitude determined by the interplay of Financial Knowledge, Financial Attitude, and Financial Behavior. The computation involves the unstandardized coefficients: 1.800 for Financial Knowledge, 1.927 for Financial Attitude, and 1.357 for Financial Behavior. These coefficients signify the unit increase in the Financial Literacy Index associated with one-unit increments in each dimension. The Financial Literacy Index offers a quantitative representation of respondents' overall financial literacy, with higher scores indicating a more robust grasp of financial concepts and a more positive orientation toward financial matters.

## Statistical Analysis

Statistical analyses were performed using SPSS version 28, and a significance level of 0.05 was applied. To assess the impact of sociodemographic factors and financial literacy, standardized beta coefficients were computed for financial knowledge, financial attitude, financial behavior, and overall financial literacy. Spearman correlation was employed for ordinal data, while Pearson correlation was utilized for continuous data. Simple linear regression was conducted for each independent variable, followed by multiple linear regression to examine the relationships between financial knowledge, attitude, and financial behavior with financial literacy.

## Results

The overall financial literacy score, representing a comprehensive assessment of financial knowledge, behavior, and attitude, was calculated by summing individual scores from the three domains. The financial literacy score was determined to be 20.8 out of 28 (74% of the maximum). The threshold for the three distinct domains (financial knowledge, financial attitude, and financial behavior) was extrapolated from the OECD INFE methodology (2018) with slight modifications to establish predefined benchmarks. The thresholds were 6/10 (60% of the maximum) for financial knowledge, 5/8 (62.8% of the maximum) for financial attitude, and 6/10 (60% of the maximum) for financial behavior. These doctor participants were categorized as having high financial knowledge, high financial attitude, and high financial behavior if

they attained levels equal to or above the thresholds above, respectively.

The questionnaire had 10 financial knowledge questions, 8 financial attitude questions, and 15 financial behavior questions. The results for each domain were 77% for financial knowledge, 75% for financial attitude, and lastly 69% for financial behavior. Among the total participants, 87% met the threshold for financial knowledge, 70% met the threshold for financial attitude, and 79.7% met the threshold for financial behavior.

Overall, the respondents predominantly comprised females (58%), mid-career (64% had 1-10 years of working experience), and urban-dwelling healthcare professionals, with medical doctors (86%) being the predominant cadre. A little over half of the participants (51%) fell within the 26-35 age range, and 92% were between 26-45 years old. Fifty-six percent were married, 35% were single, 4% were divorced/separated, and 1% were widowed. Eighty-six percent were from urban dwellers. The majority (57%)

possessed a master's degree, highlighting a high level of education among the respondents., and 45% earned between 200,001 and 400,000 Kenya shillings.

The analysis of demographic factors about financial literacy revealed intriguing insights. Gender exhibited minimal influence on financial literacy. Gender showed minimal influence ( $\beta = -0.007$ ,  $p = 0.962$ ), while age had a slight positive association ( $\beta = 0.261$ ,  $p = 0.108$ ). Marital status had little effect ( $\beta = 0.05$ ,  $p = 0.647$ ). Geographical zone ( $\beta = -0.226$ ,  $p = 0.225$ ) and education level ( $\beta = -0.164$ ,  $p = 0.152$ ) contributed modestly. Employment status had a moderate role ( $\beta = 0.179$ ,  $p = 0.15$ ), while medical cadre ( $\beta = 0.003$ ,  $p = 0.978$ ) showed minimal impact. Years of experience ( $\beta = -0.077$ ,  $p = 0.655$ ) and income level ( $\beta = 0.015$ ,  $p = 0.828$ ) had limited influence on overall financial literacy. This socio-demographic analysis underscores the importance of considering diverse factors when addressing financial literacy among healthcare professionals.

**Table 1: Correlations Analysis between Financial Knowledge, Financial Attitude, Financial Behavior, and Financial Literacy**

		Financial Knowledge	Financial Literacy
Financial Knowledge	Pearson Correlation	1	.591**
	Sig. (2-tailed)		.000
	N	339	339
Financial Literacy	Pearson Correlation	.591**	1
	Sig. (2-tailed)	.000	
	N	339	339
		Financial Attitude	Financial Literacy
Financial Attitude	Pearson Correlation	1	.669**
	Sig. (2-tailed)		.000
	N	339	339
Financial Literacy	Pearson Correlation	.669**	1
	Sig. (2-tailed)	.000	
	N	339	339
		Financial Behaviour	Financial Literacy
Financial Behaviour	Pearson Correlation	1	.812**
	Sig. (2-tailed)		.000
	N	339	339
Financial Literacy	Pearson Correlation	.812**	1
	Sig. (2-tailed)	.000	
	N	339	339

\*\* . Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 1, there was a positive and statistically moderate relationship between financial knowledge and financial literacy among the examined healthcare workers,  $r(339) = 0.591$ ,  $p < 0.05$ . In simpler terms, individuals who possess higher financial knowledge tend to also exhibit higher levels of financial literacy. This finding suggests that a stronger grasp of financial concepts is associated with a greater understanding of practical financial matters. There was a statistically significant positive correlation,  $r(339) = 0.669$ ,  $p < 0.05$  between financial attitude and financial literacy among healthcare workers. The findings reinforce the notion that a solid foundation in financial attitude can indeed enhance individuals' ability to navigate various financial scenarios and make informed choices. Lastly, the association between financial behavior and financial literacy was examined using correlation analysis. The analysis revealed a statistically significant positive correlation  $r(339) = 0.812$ ,  $p < 0.05$  between the two variables. This suggests that as individuals exhibited more responsible financial behaviors, their level of financial literacy also increased. In other words, participants who practiced careful spending, timely bill payment, and effective financial planning tended to possess higher financial literacy. This insight highlights the importance of fostering responsible financial practices as a means to enhance overall financial understanding and decision-making capabilities.

Regression analysis (Table 2) was conducted to determine the degree to which financial knowledge predicts financial literacy within the context of healthcare workers. The model summary section provides insight into the influence that financial knowledge holds over financial literacy.

**Table 2: Model Summary between Financial Knowledge and Financial Literacy, Financial Attitude and Financial Literacy, and, Financial Behavior and Financial Literacy**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.591 <sup>a</sup>	.349	.347	3.10327	.349	181.001	1	337	.000	2.129

a. Predictors: (Constant), Financial Knowledge

b. Dependent Variable: Financial Literacy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.669 <sup>a</sup>	.447	.445	2.86085	.447	272.505	1	337	.000	2.011

a. Predictors: (Constant), Financial Attitude

b. Dependent Variable: Financial Literacy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.812 <sup>a</sup>	.659	.658	2.24683	.659	651.164	1	337	.000	2.135

a. Predictors: (Constant), Financial Behaviour

b. Dependent Variable: Financial Literacy

The adjusted R<sup>2</sup> value of 0.347 indicated that 34.7% of the variance in financial literacy is explained by participants' financial knowledge while considering factors such as sample size and degrees of freedom. This finding indicates that financial knowledge is a significant predictor of financial literacy among healthcare workers. Table 2 further shows the level of influence of financial attitude on the financial literacy of healthcare workers. Financial attitude accounts for 44.5% of the variance in the health workers' financial literacy (adjusted R<sup>2</sup> = 0.445). While financial attitude has a notable impact on financial literacy, other factors not accounted for in this analysis also play a role. Overall, these findings suggest that addressing financial attitudes as part of financial education initiatives could contribute to enhancing financial literacy outcomes. Lastly, regression results (Table 2) indicate that financial behavior explains 65.8% of the variance in financial literacy (adjusted R<sup>2</sup> = 0.658). This outcome highlights the substantial influence that responsible financial behavior has on healthcare workers' level of financial literacy, underscoring the importance of cultivating such behaviors to promote higher financial understanding and decision-making capabilities

The study also carried out an ANOVA to assess the relationship between financial knowledge and financial literacy among healthcare workers as reflected in Table 3.

**Table 3: ANOVA between Financial Knowledge and Financial Literacy, Financial Attitude, and Financial Literacy, and, Financial Behavior and Financial Literacy**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1743.084	1	1743.084	181.001	.000 <sup>b</sup>
	Residual	3245.400	337	9.630		
	Total	4988.484	338			

a. Dependent Variable: Financial Literacy

b. Predictors: (Constant), Financial Knowledge

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2230.313	1	2230.313	272.505	.000 <sup>b</sup>
	Residual	2758.171	337	8.184		
	Total	4988.484	338			

a. Dependent Variable: Financial Literacy

b. Predictors: (Constant), Financial Attitude

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3287.228	1	3287.228	651.164	.000 <sup>b</sup>
	Residual	1701.256	337	5.048		
	Total	4988.484	338			

a. Dependent Variable: Financial Literacy

b. Predictors: (Constant), Financial Behaviour

As Table 3 demonstrates, the outcome of the Analysis of Variance (ANOVA) indicates a positive and statistically significant relationship between financial knowledge and financial literacy among the healthcare workers under investigation (F (1, 338) = 181.001, p < 0.05). The

results reveal that when medical practitioners understand more about financial concepts, they tend to be better at understanding practical financial situations.

**Table 4: Regression Coefficients between Financial Knowledge and Financial Literacy, Financial Attitude and Financial Literacy, and, Financial Behavior and Financial Literacy**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	8.400	.941		8.922	.000	6.548	10.252
	Financial Knowledge	1.800	.134	.591	13.454	.000	1.537	2.063

a. Dependent Variable: Financial Literacy

b. Predictors: (Constant), Financial Knowledge

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	11.200	.606		18.497	.000	10.009	12.391
	Financial Attitude	1.927	.117	.669	16.508	.000	1.697	2.156

a. Dependent Variable: Financial Literacy

Predictors: (Constant), Financial Attitude

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	10.665	.418		25.525	.000	9.843	11.486
	Financial Behaviour	1.357	.053	.812	25.518	.000	1.253	1.462

Dependent Variable: Financial Literacy

Predictors: (Constant), Financial Behaviour

The ANOVA results also show a positive, and statistically significant relationship between financial attitude and financial literacy among the examined healthcare workers ( $F(1, 338) = 272.505, p < 0.05$ ). This connection underscores the importance of nurturing positive financial attitudes within financial education initiatives. Additionally, focusing not only on acquiring financial knowledge but also on cultivating positive attitudes can lead to more impactful outcomes in financial literacy. Furthermore, Table 3 indicates a significant positive relationship between financial behavior and financial literacy ( $F(1, 338) = 651.164, p < 0.05$ ). This finding confirms that responsible financial behavior significantly contributes to the variation in financial literacy levels, further emphasizing the importance of fostering such behavior to enhance healthcare workers' financial knowledge and decision-making capabilities.

Finally, a regression analysis was done to determine the relationship between financial knowledge and financial literacy, financial attitude and financial literacy, and financial behavior and financial literacy. The findings are presented in Table 4. We scrutinize the regression coefficients presented in Table 4 to grasp the extent to which financial behavior, financial knowledge, and financial attitude impact financial literacy among healthcare workers. The regression coefficients show that financial knowledge statistically influences the financial literacy of healthcare workers ( $\beta = 1.8, t(339) = 13.454, p < 0.05$ ). The projected regression equation from Table 4 is as follows:

$$\text{Financial Literacy} = 8.400 + 1.800 * (\text{Financial Knowledge})$$

This model indicates that the financial knowledge variable positively influences the financial literacy of healthcare workers, i.e., an increase of 1 unit in the percentage of financial knowledge among healthcare workers would correspond to an increase of 1.8 indexed units in their financial literacy index. The regression coefficients show that financial attitude also statistically influences the financial literacy of healthcare workers ( $\beta = 1.927, t(339) = 16.508, p < 0.05$ ). The regression equation from Table 4 above is written as follows:

$$\text{Financial Literacy} = 11.200 + 1.927 * (\text{Financial Attitude})$$

Financial attitude has a positive and significant influence on the financial literacy of healthcare workers, i.e., an increase of 1 unit in the percentage of financial attitude of healthcare workers would increase their financial literacy index by 1.927 units. This understanding aids in quantifying the impact of attitude on financial literacy, contributing to a better comprehension of how attitudes shape individuals' financial understanding and behaviors. The regression coefficients show a positive and significant relationship between financial behavior and financial literacy of healthcare workers ( $\beta = 1.357, t(339) = 25.518, p < 0.05$ ). From the results, the regression equation is derived as follows:

$$\text{Financial Literacy} = 10.665 + 1.357 * (\text{Financial Behavior})$$

Financial behavior positively influences the financial literacy of healthcare workers, i.e., an increase of 1 unit in the percentage of financial behavior of healthcare workers would increase their financial literacy index by 1.357 units.

## Discussion

Healthcare professionals in this study had high financial literacy scores of 20.8 out of a possible 28 (74% of the maximum attainable level) compared to other populations as discussed below. The threshold of financial literacy was 17 out of a possible 28 (61%). This is similar to South African healthcare professionals who were also found to have high financial literacy levels at 79% with a threshold of 65% for the study (Millen & Stacey, 2022). Other studies spanning developing and developed countries found the financial literacy among healthcare professionals to be between 20% and 60% (Ahmed, White, Hill, Amini, & Jeffe, 2017). Eighty-seven percent of healthcare professionals in this study attained a percentage minimum threshold of 61%. This is higher than the Indian population where 68% of healthcare professionals were found to be financially literate (Agarwal & Biswas, 2022). The healthcare professionals in this study also had higher financial literacy levels at 74% than the population studied by Atkinson et al (2012), whose financial literacy attained was 65%, and Nanziri and Leibbrandt (2018), whose financial literacy level was 48%. This highlights the effectiveness of targeted financial education programs within the healthcare sector. By customizing financial education initiatives to meet the specific needs of healthcare professionals, their financial literacy levels can be further improved, potentially exceeding those found in similar studies.

The study investigated financial literacy differences among vulnerable groups. Averaging financial literacy scores based on population can obscure knowledge gaps in vulnerable groups (Lusardi, 2019). Interestingly, gender did not have a significant impact on overall financial literacy. This is in contrast to other studies that found being a male doctor or a male student to be an independent factor for higher financial literacy levels (Millen & Stacey, 2022; Jayakumar, Larkin, Ginzberg, & Pate, Personal financial literacy among U.S. medical students., 2017; Klapper, Lusardi, & van Oudheusden, 2015; Altan & BiÇer, 2017). Despite these results, women are more reserved and less likely to answer they don't know when they do not as compared to men. Therefore, gender remains of utmost importance when coming up with financial education for financial literacy (Lusardi, 2019). Similarly, marital status as a sociodemographic determinant was found to have little bearing on financial literacy. This could be attributed to heightened financial responsibilities, which likely prompt individuals to plan more extensively for their future needs (Agarwal & Biswas, 2022). Age had a positive association with financial literacy. Studies in developing countries have shown that financial literacy increases with age but later in the life cycle begins to decline. This increase in financial literacy among healthcare workers may stem from the correlation between age-related income growth and the necessity to implement various financial instruments effectively (Agarwal & Biswas, 2022).

In this study, both the younger and older age groups have demonstrated lower levels of financial literacy. These groups are considered vulnerable in financial literacy surveys and their unique financial needs should be addressed with customized financial education programs (Francisco, Francisco, & Carla, 2022; Lotto & Tokic, 2020; Lusardi, 2019). Years of experience had a limited impact, with a positive association of up to 30 years of experience. This is similar to other studies that have found a positive association between financial literacy and years of experience (Agarwal & Biswas, 2022). Income levels showed an increase in financial knowledge as income rose, yet income's impact on overall financial literacy was found to be minor. Similar findings regarding income's influence on financial literacy have been reported in other

studies as well (Klapper, Lusardi, & van Oudheusden, 2015; Akin, 2021; Nanziri & Leibbrandt, 2018). These results emphasize the complex interplay of sociodemographic factors in shaping financial literacy among healthcare professionals. They also suggest the potential benefits of targeted financial education interventions to address specific social and demographic needs to enhance overall financial literacy levels within the healthcare sector.

This study found that individuals with unstable employment had lower levels of financial literacy, in contrast to other studies (Francisco, Francisco, & Carla, 2022). Financial education incentives should include variables for the two groups. Education level exhibited a mild effect, consistent with other studies (Millen & Stacey, 2022). However, higher education correlated with higher financial literacy levels, consistent with prior research (Klapper, Lusardi, & van Oudheusden, 2015). Financial education incentives should consider the differences between individuals with varying education levels. Studies have found that higher education is linked with higher levels of financial literacy, which in turn can lead to more appropriate financial attitudes. While education level only had a mild effect on financial literacy, there is evidence to suggest a positive correlation between education and financial literacy (Francisco, Francisco, & Carla, 2022). This underscores the importance of effecting financial education initiatives at all levels to ensure wide capture. In this study, geographical zones held a more noteworthy impact on financial literacy. Urban-dwelling doctors were found to have higher levels of financial literacy than those in rural and other areas. Similar studies have linked higher levels of financial literacy with those living in urban areas. This phenomenon may be attributed to factors such as improved access to financial products and better infrastructure, among other variables (Francisco, Francisco, & Carla, 2022).

In this study, the results showed an increase of 1 unit in the percentage of financial knowledge among healthcare workers would correspond to an increase of 1.8 indexed units in their financial literacy index. As individuals gain more knowledge about finance, it is probable that their financial literacy also improves, and vice versa. Research has demonstrated that the influence of financial education on financial knowledge is similar in magnitude to the impact of education in other fields. (Kaiser, 2022). In addition, randomized controlled trials have found that the treatment of financial knowledge with financial education is positive and significant statistically (Isaincu, 2021; Kaiser, 2022). In cases where there was no demonstration of a short-term or long-term positive effect of financial education on financial knowledge, the educational interventions were heterogeneous and not customized to individual needs (Batty, 2015). The present study highlighted a robust and statistically significant connection between financial knowledge and financial literacy. This is similar to other studies that have found a positive correlation between financial knowledge and financial literacy (Isaincu, 2021). This underscores the importance of financial education and understanding financial concepts in facilitating informed financial decision-making among healthcare workers, consistent with existing literature (Kiril, 2020; Lusardi, Michaud, & Mitchell, 2017). Regression analysis further reinforced the positive impact of financial knowledge on financial literacy, emphasizing the potential for investments in financial education to substantially enhance the financial literacy levels of healthcare professionals. Targeted financial education initiatives are tailored to the specific needs of healthcare professionals to promote their financial well-being and decision-making



capabilities (Kadoya & Khan, 2020; Lusardi, Michaud, & Mitchell, 2017).

This study showed that an increase of 1 unit in the percentage of the financial attitude of healthcare workers would increase their financial literacy index by 1.927 units. Studies have shown financial education interventions targeting financial attitude to positively impact financial literacy. Furthermore, the results showed a strong positive link between financial attitude and healthcare workers' financial literacy (Lusardi & Mitchell, 2011; Yap, Komalasari, & Hadiansah, 2018). This is similar to findings in prior research that also found financial attitude and financial literacy to be positively correlated (Rai, Dua, & Yadav, 2019; Agarwal & Biswas, 2022). The robust financial attitude levels observed among healthcare professionals in this study point to the significance of addressing financial attitudes within financial education initiatives. Integrating components focused on shaping positive financial attitudes into financial education programs could enhance healthcare workers' overall financial literacy and decision-making capabilities. Aligning with the Theory of Planned Behavior, which emphasizes the influence of attitudes on behavior, targeted financial education interventions can help cultivate a mindset conducive to making sound financial decisions. Strategies to address financial attitudes alongside the acquisition of financial knowledge programs can better equip healthcare professionals to navigate complex financial landscapes (Ajzen, 1991).

Prior research shows that financial education has a highly statistically significant impact on financial behaviors. This study found that increasing financial behavior by 1 unit would lead to an increase of financial literacy by 1.357 units. Furthermore, the analysis revealed a positive and statistically significant correlation between financial behavior and financial literacy among the healthcare workers studied. This highlights the importance of promoting responsible financial behaviors within financial education programs tailored to healthcare professionals, as outlined in existing literature. (Atkinson & Messy, 2012; Ameliawati & Setiyani, 2018). Previous research has shown that there are no significant differences in the effectiveness of financial education programs targeting various financial behaviours. However, it has been observed that budgeting interventions tend to have a greater impact. Moreover, financial education initiatives have a stronger influence on short-term and retirement saving behaviours compared to borrowing behavior. These findings suggest that debt-related financial behaviours may be more challenging to address through financial education programs (Kaiser & Menkhoff, 2017; Kaiser & Menkhoff, 2020). Overall, previous research confirms the effectiveness of financial education in promoting certain behaviors. However, it is important to acknowledge that behavioral biases can influence financial behavior (Baker, Kumar, Goyal, & Gaur, 2019; Akin, 2021). Therefore, addressing not only financial behavior but also behavioral biases should be part of comprehensive financial education programs for healthcare professionals to achieve holistic financial well-being.

### Limitations and Recommendations

While this study addressed certain challenges, four inherent limitations were identified. Firstly, the widespread distribution and unpredictable work shifts of healthcare professionals might have introduced selection bias, potentially impacting the generalizability of the findings. Although efforts were made to mitigate this limitation through a digital data collection tool sent via mobile phones, some professionals might still have been inadvertently

excluded. Additionally, technological barriers persisted, with some participants facing difficulties in completing online questionnaires. Despite providing a guide and a printed option, these challenges could have influenced the inclusivity of responses. The third limitation was that this was a cross-sectional study capturing a snapshot of financial literacy among healthcare professionals at a specific point in time and did not capture changes in financial literacy over an extended period. Lastly, the assessment of financial literacy in this study focuses on specific domains such as knowledge, behavior, and attitude. However, financial literacy is a multifaceted concept, and additional dimensions such as behavioral biases, culture, and religion were not explored.

In light of the study's outcomes on the factors influencing the financial literacy of healthcare professionals in Kenya, several targeted recommendations emerge. Financial education programs should be meticulously tailored for distinct groups, including young individuals, seniors, and those residing in rural areas, who require specialized initiatives to enhance their financial knowledge and modify financial behavior. Financial literacy enhancing education should be integrated into the medical undergraduate and postgraduate training curriculum. This will narrow the existing financial literacy gap among healthcare professionals. This cognitive approach to financial education can significantly contribute to enhancing understanding and proficiency in financial matters within the medical community. Furthermore, it is recommended to implement sensitization programs aimed at raising awareness and underscoring the critical importance of financial literacy among healthcare professionals. These initiatives could be complemented by self-paced online courses with interactive elements, to target healthcare professionals beyond undergraduate training or not currently in postgraduate programs. To foster positive financial behavior modifications, the study recommends the incorporation of digital education strategies. Leveraging technologies such as online simulators, calculators, and timely reminders can play a pivotal role in enhancing financial literacy and behavior among healthcare professionals. For future research, it is suggested to explore personal factors such as religious and ethnic influences on financial literacy. Longitudinal studies could be conducted to assess the lasting effects of financial education over time. Additionally, investigating the impact of cultural factors and personality traits on financial literacy would be a valuable avenue for further research. Furthermore, delving into the relationship between financial inclusion and the financial behavior of healthcare professionals, particularly considering geographical variations, would offer valuable insights for comprehensive advancements in financial literacy initiatives within this demographic.

### Conclusion

The comprehensive analysis in this study underscores the critical role of financial education in enhancing the financial literacy and well-being of healthcare professionals. Targeted financial education interventions tailored to the specific needs of vulnerable groups within the healthcare sector are essential for bridging knowledge gaps and promoting informed decision-making. Sociodemographic factors such as gender, age, education level, and geographical location have varied influences on financial literacy levels therefore, financial education initiatives should be targeted towards the different variables. The study also demonstrates a significant positive impact of enhancing financial knowledge, financial attitude, and financial behavior on enhancing financial

literacy through financial literacy interventions. The study demonstrates the significant and positive relationships between higher financial knowledge, positive financial attitudes, and prudent financial behavior with improved financial literacy outcomes. Financial behavior emerged as a key determinant, explaining a notable portion of the variance in financial literacy. Positive attitudes significantly influence financial literacy, and therefore addressing financial attitudes is crucial in financial literacy interventions. Moreover, financial knowledge stands out as a significant predictor, explaining a substantial proportion of the variance in financial literacy. These findings collectively underscore the multifaceted nature of approaching financial education among healthcare professionals. Overall, the study reinforces the importance of integrating financial education into healthcare professional training curricula and implementing customized interventions to address the diverse financial needs and challenges faced by this demographic.

## Ethical Statement

The study prioritized participant well-being, carefully weighing benefits against potential risks. Privacy protection measures, including secure data handling, were implemented, and impartiality was maintained throughout.

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