

Assessing financial literacy amongst anaesthetists in an academic department

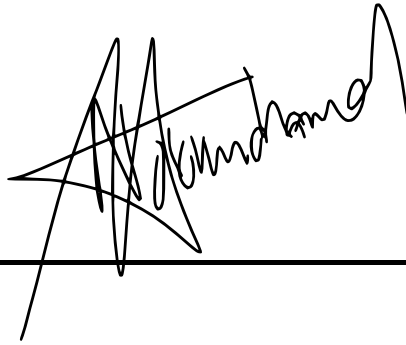
Ayesha Noor Mohamed

A research report submitted to the Faculty of Health Sciences,
University of the Witwatersrand, Johannesburg, in partial
fulfilment of the requirements for the degree of
Master of Medicine in the branch of Anaesthesiology

Johannesburg 2021

Declaration

I, Ayesha Noor Mohamed, herewith declare that this research report is my own, unaided work. It is being submitted for the degree of Master of Medicine at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

A handwritten signature in black ink, appearing to read 'Ayesha Noor Mohamed', is written over a solid horizontal line.

Signed

On this 20th day of August 2021

Dedication

This research project is dedicated to my parents, who have always pushed me to value education, skills and hard work. It is also dedicated to my loving husband, who has wiped away the tears from my eyes and the sweat from my brow since I began this journey. I am forever grateful to them.

Abstract

Background:

Financial literacy is an important skill that is used to navigate the complex financial landscape. According to studies done in South Africa, wealth, income, racial classification, age, geographical location and level of education affect financial literacy levels. Higher financial literacy is associated with greater wellness and less financial concerns. Studies done in other countries show that doctors have low financial literacy. The financial literacy of anaesthetists in South Africa is not known.

Objectives:

The aim of this study was to assess financial literacy among anaesthetists in the Wits Department of Anaesthesiology and to identify demographic factors that could predict differences in financial literacy.

Methods:

This was a cross-sectional, contextual and descriptive study using an anonymous, self-administered questionnaire. The questionnaire was an adaptation of the original used in the South African Social Attitudes Survey and was scored similarly. A mean financial literacy score was calculated for each anaesthetist using four domain scores (financial knowledge, financial planning, financial control and product choice and awareness) and used to make comparisons between demographic categories.

Results:

A total of 184 anaesthetists from the Wits Department of Anaesthesiology were included. The mean financial literacy score (0-100 scale) was 72. With the exception of White anaesthetists scoring higher than Coloured anaesthetists ($p = .049$), no other demographic category showed significant differences. Gender, age, relationship status and years of employment did not inform any enduring trend with regards to mean financial literacy scores. The mean scores for the individual domains were 79 for financial control, 76 for financial planning, 51 for product choice and 82 for financial knowledge. Between the domains, the mean financial knowledge score was higher than the mean financial planning score ($p = .011$). The product choice score was found to be the lowest ($p < .0005$). Only 35% of anaesthetists are confident in buying financial products and services by themselves while 8.2% of

anaesthetists are very confident in their retirement planning. Anaesthetists who held an unsuitable financial product in their portfolio accounted for 40%, while 36% of anaesthetists experienced regret regarding financial decisions. It was also found that younger, junior, Coloured and Black anaesthetists have poorer financial preparedness.

Conclusion:

Anaesthetists in the Wits Department of Anaesthesiology have high levels of overall financial literacy, however, do not display adequate preparedness in planning for a secure financial future. A mandatory structured financial literacy programme during university, specialisation and fellowship training is recommended. (393 words)

Acknowledgements

I would like to thank Zainub Jooma for her continuous guidance, support and patience throughout this process. I would also like to acknowledge Mr Benjamin Roberts and Mr Lyndwell Clarke for their assistance regarding the use of the questionnaire. I would like to thank Dr Gill Hendry for her assistance with statistical analysis. To Adela and Taariq for being willing to read my drafts and give me feedback, thank you. Finally, thank you to Zayd for helping me figure out how to use all the software I needed for this project.

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List of abbreviations

NIDS	National Income Dynamics Study
SASAS	South African Social Attitudes Survey
COVID-19	Coronavirus disease
OECD	The Organisation for Economic Co-operation and Development

Draft article

The article is prepared according to the author guidelines for the South African Medical Journal (Appendix 4) and may differ from the rest of the document.

Assessing financial literacy among anaesthetists in an academic department

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Introduction

Financial literacy is defined as ‘a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being’^[1]. Financial literacy has been shown to impact saving and investment behaviour, debt management and borrowing practices, wealth accumulation and planning for retirement^[2]. Higher financial literacy also decreases anxiety in the workplace, helps to reduce illness, financial disputes, abuse of children and conflict among families^[3, 4]. People who are from backgrounds of higher financial literacy tend to have higher levels of productivity^[3, 4]. Now more than ever, individuals are required to take control of their personal finances as a rising life expectancy increases the need for savings and retirement planning. Financial markets are also becoming more complex and diverse, offering a wider range of financial products. This cumulative challenge requires greater skill when an individual is navigating their financial course^[2].

Despite South Africa boasting a sophisticated financial sector, income wealth inequality in South Africa is among the highest in the world^[5-7]. According to the National Income Dynamics Study (NIDS) and subsequent research pertaining to it, financial literacy is higher in people who are more educated, earn a higher income and are wealthy^[6]. There are also large differences in financial literacy among different racial classifications, where the White and Asian subgroups are found to be more financially literate^[5, 6]. Those residing in the Eastern Cape, Northern Cape, Mpumalanga and the North West provinces were found to have lower financial literacy, however, this could also be explained by the racial distribution within these provinces^[5]. Data from the South African Social Attitudes Survey (SASAS) suggests that a considerable portion of adults in South Africa are not sufficiently financially literate and find fiscal matters challenging^[7].

Most doctors complete their training with little to no knowledge on finances or business^[8, 9]. Increasing years of specialisation delays earning potential, placing doctors behind their contemporaries in other fields^[8]. The healthcare sector is becoming increasingly complex with more regulations and greater competition, making it more difficult to run a successful medical practice^[8]. In addition, the rising cost of medical education incurs a greater amount of debt at the end of training, influencing personal and professional decisions^[10, 11]. Aside from discouraging doctors away from primary health care and towards higher paying specialities^[10, 12], educational debt also influences choices such as marriage, children and buying a house. The perceived delay in the natural progression of one’s life often leads to frustration and burnout^[11]. Anaesthetists already experience high levels of burnout^[13, 14]. A study done within the Wits Department of Anaesthesiology found high levels of burnout among 21% of anaesthetists within the department^[14].

Financial literacy among doctors remains low^[8, 9]. A study done at the Washington School of Medicine found that residents had low financial literacy and investment-risk tolerance, high debt and deficits in financial preparedness^[9]. It has also been shown that among anaesthesiologists who retire later than expected, the second most common reason quoted was not being able to afford to retire^[15]. In addition, the Coronavirus disease (COVID-19) pandemic has had a negative financial effect on medical practices. Physicians have reported cutting back on working hours and incurring salary cuts very early into the pandemic^[16].

The body of literature outlining strategies to improve financial literacy in academic programmes remains limited. A study conducted on fourth-year medical students at the University of Arkansas for Medical Sciences confirmed that a 20-hour course on business finance would improve students' knowledge of personal and business financial topics. The course had positive impact on students' financial decisions and was found to be feasible and economical, in addition to helping students to address their knowledge deficit ^[17]. In 2005 the Organisation for Economic Co-operation and Development (OECD) published a paper making recommendations on implementing financial literacy at a school level. The paper recommends a nationally scalable programme which has a sustainable source of funding, a comprehensive learning framework, adequately trained teachers, easily accessible resources and a means for the content to be assessed ^[18]. Currently, no such programme exists in South Africa, nor are there any studies on the financial literacy of doctors in South Africa

The aim of this study was to assess overall financial literacy among anaesthetists in the Wits Department of Anaesthesiology and to identify factors that predict higher or lower levels of financial literacy.

Methods

This study was a cross-sectional, contextual and descriptive study using an anonymous, self-administered questionnaire. It was conducted within the Wits Department of Anaesthesiology between the months of October 2020 to January 2021. The study sample consisted of 238 anaesthetists working in the department and included interns, medical officers, registrars and consultants. The sample size required was calculated as 162, with a 95% confidence interval and a margin of error of 5%. The number was adjusted for a 10% non-response rate. Approval was obtained from the Human Research Ethics Committee (M200626) and other relevant authorities.

The questionnaire used in this study is an adaptation of the original questionnaire developed by the Human Sciences Research Council in collaboration with the Financial Services Board ^[7]. The questionnaire was based on the initial work done by the Organisation for Economic Co-operation on financial literacy. It has been used and adapted in five successive waves to assess financial literacy in South Africa in a study called SASAS ^[7, 19-21]. It is a multi-dimensional tool and tests four major domains i.e. financial control, financial planning, product choice and awareness, and financial knowledge. Permission was obtained prior to use and adaptation of the questionnaire. The adapted questionnaire consisted of 38 questions including five demographic questions.

The questionnaire was distributed, using a REDcap ^[22] public survey link, to anaesthetists working in the department during the study period. Consent was implied upon completion of the questionnaire. The anaesthetists' email addresses were de-linked from the questionnaire to ensure anonymity. The questionnaires were scored using the same weighting system that was used in the SASAS study.

Data were analysed using the SPSS data package. Descriptive statistics were reported using frequencies and percentages, and means and standard deviations. To identify associations between mean scores in the financial literacy domains and demographics, the Mann-Whitney, Kruskal Wallis, t-test and ANOVA tests were done depending on the normality of the data. For comparison of demographic characteristics across individual questions, the Pearson Chi-

Square and Fisher's Exact tests were used. Results were reported using odds ratios and 95% confidence intervals. A p-value of <0.05 was considered statistically significant. Data were analysed and reported in congruence with the SASAS study. Incomplete questionnaires were included in the data analysis, resulting in 56 missing data fields from five questionnaires. Blank questionnaires were excluded.

Results

A total of 184 anaesthetists were included in the study. The recruitment process is outlined in figure 1. The demographic characteristics of the anaesthetists are summarised in table 1.

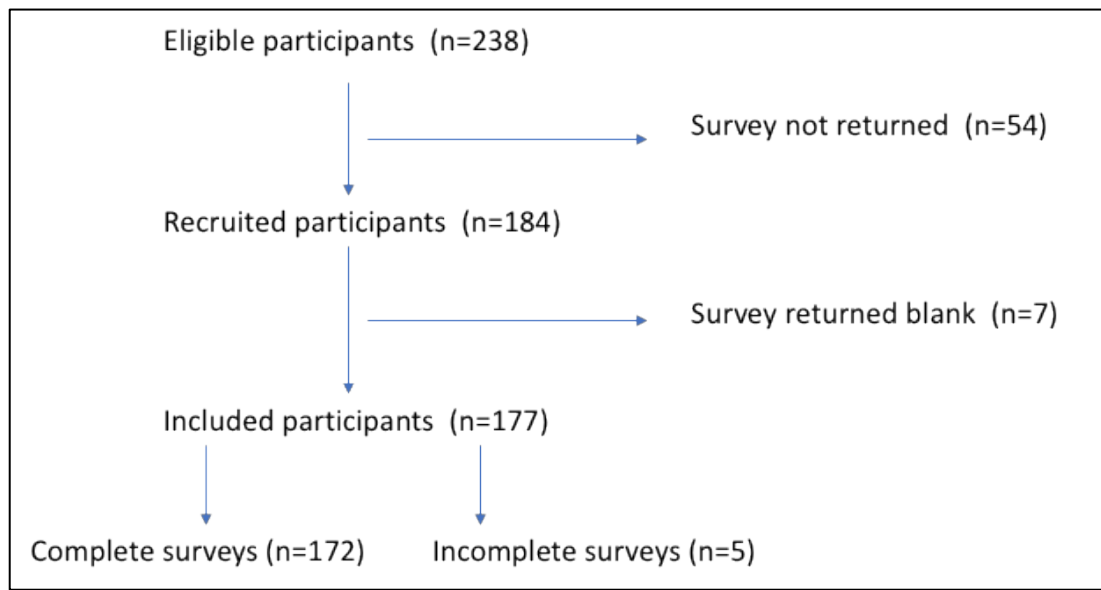


Figure 1: Recruitment of participants in the Wits Department of Anaesthesiology

Table 1: Demographic characteristics of anaesthetists

Demographic	n (%)
Gender	
Male	70 (38.0)
Female	114 (62.0)
Marital status	
Married	113 (61.4)
Unmarried	71 (38.6)
Age	
16-24	1 (0.5)
25-34	108 (58.7)
35-49	59 (32.1)
50-64	10 (5.4)
>65	5 (2.7)
Missing	1 (0.5)
Race	
Black	47 (25.5)
White	89 (48.4)
Indian	34 (18.5)
Coloured	5 (2.7)
Other	8 (4.3)
Missing	1 (0.5)
Years Employed	
0-3	21(11.4)
4-6	37 (20.1)
7-9	47 (25.5)
10-12	31 (16.8)
>12	47 (25.5)
Missing	1 (0.5)

The mean financial literacy score, on a 0-100 scale, was 72. The results for individual domains indicated a mean score of 79 for financial control, 76 for financial planning, 51 for product choice and 82 for financial knowledge. The demographic distribution of mean scores are represented graphically in figure 2.

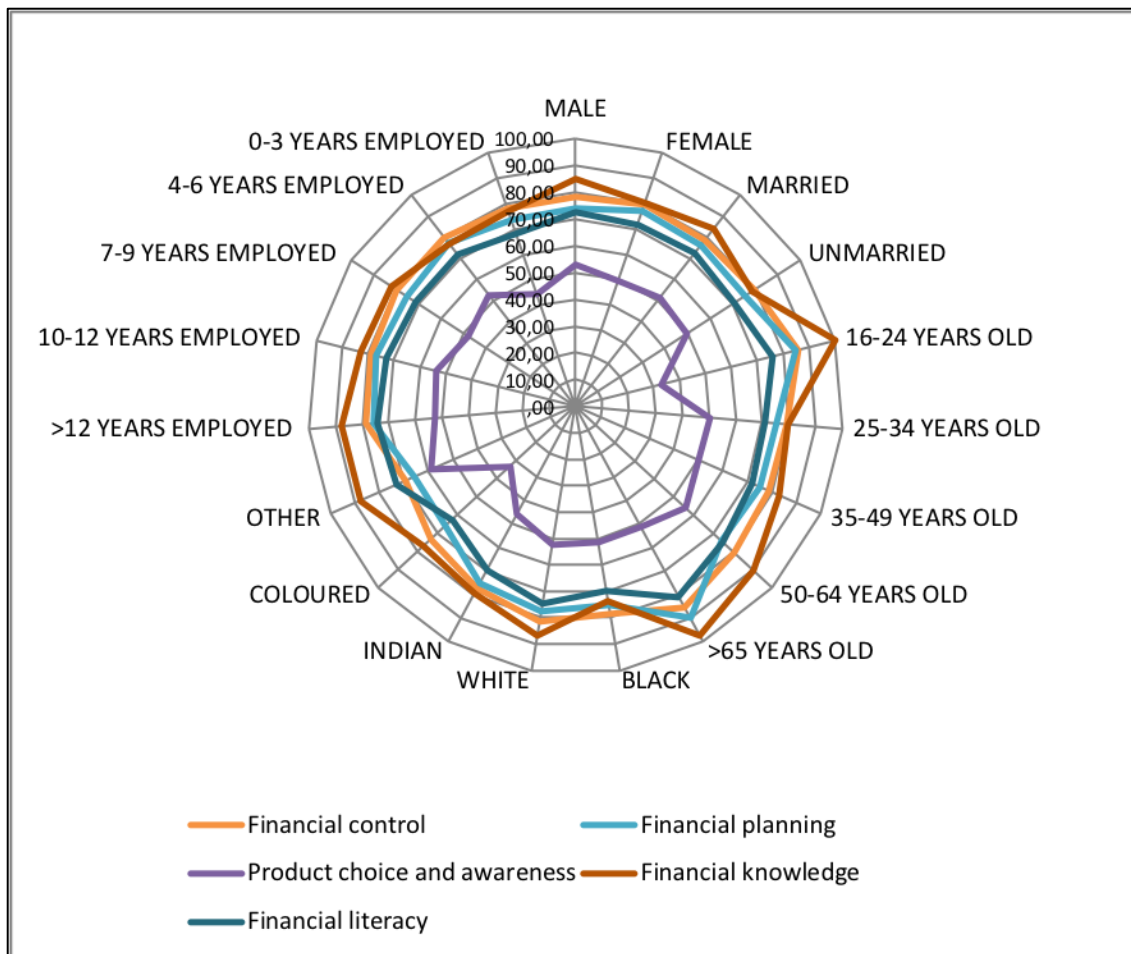


Figure 2: Demographic distribution of mean financial literacy and domain scores

Analysis of mean financial literacy scores across the demographic categories found no significant difference, with the exception of White anaesthetists scoring significantly higher than Coloured anaesthetists ($p = .049$).

Analysis using repeated measures ANOVA shows that there is significant difference in the mean scores for the four individual domains. In particular, the mean financial knowledge score was higher than the mean financial planning score ($p = .011$). The product choice score was also found to be significantly lower than all other domains ($p < .0005$).

Statistically significant differences in domain mean scores across demographic categories were only found in the financial knowledge domain with those who were married scoring higher than those who were unmarried ($p = .034$); those over the age of 65 scoring higher than those aged between 16-34 and 35-49 ($p = .005$ and $p = .012$ respectively); those who were White scoring higher than those who were Black or Indian ($p < .0005$ and $p = .018$ respectively); and those who were employed >12 years scoring higher than those who were employed for 0-3 and 4-6 years ($p = .007$ and $p = .009$ respectively).

Financial behaviours and attitudes were examined. The study found that 62% of anaesthetists have a household budget. Analysis to determine differences across demographic

characteristics shows that Indian and ‘Other’ anaesthetists are significantly less likely than Black anaesthetists to have a household budget ($p=.026$), with odds ratios of 0.314 (95% CI 0.12 – 0.82) and 0.105 (95% CI 0.02 – 0.60) respectively.

When asked to rate their agreement (on a five-point scale) to the statement “money is there to be spent”, more anaesthetists disagreed with the statement compared to those who agreed ($p<.0005$). In particular, White anaesthetists showed significantly more disagreement than Indian anaesthetists ($p=.030$). It was also found that 65% of anaesthetists set long term financial goals and work hard to achieve it. When asked if, before buying something, they carefully considered if they could afford it, 74% responded that they do. When asked if they pay their bills on time, 83% responded that they always do.

Financial decision making was examined. When asked who was responsible for day-to-day money management decisions in the household, 98% responded that they were responsible either by themselves or together with someone else. Anaesthetists were asked to rate their confidence in buying financial services and products without the help of a financial advisor and only 35% indicated confidence in this sphere. When asked if they always research their financial decisions thoroughly, 69% of anaesthetists agreed that they do. The most influential source impacting financial decision making was ‘advice from a financial advisor’. Other sources of learned financial knowledge include parents and spouses. The share of those who possessed an unsuitable financial product in their portfolio was 40%, while 36% of anaesthetists experienced regret regarding one or more financial decisions. The demographic characteristics associated with financial regrets are outlined in Table 2 where race, gender, marital status and years employed were significantly associated.

Table 2: Demographic characteristics associated with financial regret and shortfall

Indicator	Demographic	N (%)		p-value	OR	95% CI
		Yes	No			
<i>Savings or investments</i>	Gender					
	Male	17 (60.7)	53 (34.0)	.007**	3.003	1.31 - 6.87
	Female	11 (39.3)	103 (66.0)		1.00	-
	Marital status					
	Married	11 (39.3)	102 (65.4)	.009**	1.00	-
Unmarried	17 (60.7)	54 (34.6)	2.919		1.28 - 6.68	
<i>Tax</i>	Gender					
	Male	15 (65.2)	55 (34.2)	.004**	3.614	1.44 - 9.05
	Female	8 (34.8)	106 (65.8)		1.00	-
<i>Managing credit/ debt</i>	Race					
	Black	12 (37.5)	35 (23.2)	.049*	1.00	-
	White	12 (37.5)	77 (51.0)		.455	.19 - 1.11
	Indian	4 (12.5)	30 (19.9)		.389	.11 - 1.33
	Coloured	3 (9.4)	2 (1.3)		4.375	.65 - 29.41
	Other	1 (3.1)	7 (4.6)		.417	.05 - 3.74
<i>Experienced a financial shortfall</i>	Race					
	Black	26 (44.1)	21 (17.1)	<.0005	1.00	-
	White	23 (38.9)	65 (52.8)		.286	.14 - .60
	Indian	5 (8.5)	29 (23.6)		.138	.05 - .42
	Coloured	3 (5.1)	2 (1.6)		1.212	.19 - 7.94
	Other	2 (3.4)	6 (4.9)		.269	.05 - 1.47
	Years employed					
	0-3	4 (6.8)	17 (13.8)	.024**	.486	.14 - 1.70
	4-6	18 (30.5)	19 (15.4)		1.958	.80 - 4.78
	7-9	9 (15.3)	38 (30.9)		.489	.19 - 1.27
	10-12	13 (22.0)	18 (14.6)		1.493	.58 - 3.83
>12	15 (25.4)	31 (25.2)	1.00		-	

** Pearson's Chi-square

* Fisher's exact

Anaesthetists were questioned as to whether they experienced a financial shortfall in the last 12 months, to which 33% responded yes. The significant demographic characteristics associated with a financial shortfall are outlined in Table 2 with more Black and Coloured anaesthetists, and more junior anaesthetists, having experienced a financial shortfall. When asked about strategies to cope with a financial shortfall, 78% of anaesthetists either draw money out of a savings account or transfer money from a savings to a current account instead of using credit facilities.

Saving behaviour was reflected in anaesthetists' ability to plan for financial emergencies, saving practices and retirement planning. An emergency fund that could cover three months of expenses was held by 75% of anaesthetists. When questioned about the ways in which they had been actively saving in the last 12 months, 76% put money into a savings account, 48% allow money to build up in a bank account and 55% are buying financial investments and products (excluding pension funds). Only 8.2% of anaesthetists are fully confident in their retirement planning. A retirement annuity is held by 82%, provident fund held by 24%

and pension fund held by 54% of anaesthetists. The demographic characteristics affecting saving practices and retirement planning are summarised in Table 3, where race, gender, age and years of employment all have a significant association.

Table 3: Demographic characteristics affecting saving practices and retirement planning

Indicator	Demographic	N (%)		p-value	OR	95% CI
		Yes	No			
Savings	Race					
	Black	15 (14.9)	32 (39.0)	.001*	1.00	-
	White	60 (59.4)	29 (35.4)		4.414	2.07 - 9.41
	Indian	20 (19.8)	14 (17.1)		3.048	1.22 - 7.63
	Coloured	1 (0.9)	4 (4.9)		.533	.06 - 5.19
	Other	5 (5.0)	3 (3.7)		3.556	.75 - 16.87
Owns a retirement annuity	Gender					
	Male	52 (34.4)	18 (54.5)	.031**	1.00	-
	Female	99 (65.6)	15 (45.5)		2.285	1.07 - 4.90
	Years employed					
	0-3	11 (7.3)	10 (30.3)	.001**	1.00	-
	4-6	34 (22.7)	3 (9.1)		10.303	2.40 - 44.29
	7-9	36 (24.0)	11 (33.3)		2.975	1.00 - 8.85
	10-12	28 (18.7)	3 (9.1)		8.485	1.96 - 36.78
>12	41 (27.3)	6 (18.2)	6.212		1.85 - 20.86	
Owns a provident fund	Age					
	16-34	23 (52.3)	86 (61.9)	.041*	1.00	-
	35-49	13 (29.5)	46 (33.1)		1.057	.49 - 2.28
	50-64	6 (13.6)	4 (2.9)		5.609	1.46 - 21.55
	>65	2 (4.5)	3 (2.2)		2.493	.39 - 15.81
Owns a pension fund	Age #					
	16-34	42 (42.9)	67 (78.8)	<.0005**	1.00	-
	35+	56 (57.1)	18 (21.2)		4.963	2.57 - 9.57
	Years employed					
	0-3	3 (3.1)	18 (21.2)	<.0005**	1.00	-
	4-6	17 (17.3)	20 (23.5)		5.100	1.28 - 20.32
	7-9	18 (18.4)	29 (34.1)		3.724	.96 - 14.46
	10-12	20 (20.4)	11 (12.9)		10.909	2.62 - 45.43
>12	40 (40.8)	7 (8.2)	34.286		7.94 - 147.99	

** Pearson's Chi-square

* Fisher's exact

Categories with similar results were condensed for ease of reporting

Investment products viewed in this study were unit trusts, educational policies or plans, investment or saving policies and shares in the stock exchange. Unit trusts were owned by 50%, educational policies were held by 10%, and investment or saving policies were held by 65% of anaesthetists. Shares in the stock exchange were held by 42% of anaesthetists. The demographic characteristics affecting investment behaviour are outlined in Table 4, where race and gender were found to significantly affect investment behaviour. Short term insurance products, such as home-owners insurance or household contents insurance were held less by those who were young and unmarried. Long-term insurance products (life insurance, medical aid or disability cover) was also held significantly less by those employed

0-3 years. Table 4 outlines the demographic characteristics affecting owning long-term insurance products.

Table 4: Demographic characteristics affecting investment behaviour and long-term insurance products

Indicator	Demographic	N (%)		p-value	OR	95% CI
		Yes	No			
Owns unit trusts	Race					
	Black	17 (18.9)	30 (32.3)	.027*	1.00	-
	White	48 (53.3)	41 (44.1)		2.066	0.10 - 4.27
	Indian	20 (22.2)	14 (15.1)		2.521	1.02 - 6.24
	Coloured	0 (0.0)	5 (5.4)		-	-
	Other	5(5.6)	3 (3.2)		2.941	0.62 - 13.90
Owns Educational policies	Gender					
	Male	1 (5.3)	69 (41.8)	.002**	1.00	-
	Female	18 (94.7)	96 (58.2)		12.937	1.69 - 99.23
	Race					
	Black	10 (55.6)	37 (22.4)	.025*	1.00	-
	White	4 (22.2)	85 (51.5)		0.174	0.05 - 0.59
	Indian	3 (16.7)	31 (18.8)		0.358	0.09 - 1.42
	Coloured	1 (5.6)	4 (2.4)		0.925	0.09 - 9.22
Other	0 (0.0)	8 (4.8)	-		-	
Owns shares on the stock exchange	Race					
	Black	11 (14.1)	36 (34.3)	.015*	1.00	-
	White	46 (59.0)	43 (41.0)		3.501	1.58 - 7.74
	Indian	16 (20.5)	18 (17.1)		2.909	1.12 - 7.55
	Coloured	1 (1.3)	4 (3.8)		0.818	0.08 - 8.10
	Other	4 (5.1)	4 (3.8)		3.273	0.70 - 15.29
Owns life insurance	Years employed					
	0-3	9 (6.4)	12 (28.6)	.001**	1.00	-
	4-6	31 (22.0)	6 (14.3)		6.889	2.02 - 23.55
	7-9	35 (24.8)	12 (28.6)		3.889	1.31 - 11.51
	10-12	27 (19.1)	4 (9.5)		9.000	2.31 - 35.07
	>12	39 (27.7)	8 (19.0)		6.500	2.06 - 20.56
Owns medical Aid	Years employed					
	0-3	14 (8.8)	7(29.2)	.035*	1.00	-
	4-6	32 (20.1)	5(20.8)		3.200	0.87 - 11.84
	7-9	40 (25.2)	7 (29.1)		2.857	0.85 - 9.60
	10-12	30 (18.9)	1 (4.2)		15.000	1.68 - 133.92
	>12	43 (27.0)	4 (16.7)		5.375	1.37 - 21.12
Owns disability cover	Race					
	Black	33 (23.7)	14 (31.8)	.007*	1.00	-
	White	75 (54.0)	14 (31.8)		2.273	0.98 - 5.30
	Indian	23 (16.5)	11 (25.0)		0.887	0.34 - 2.30
	Coloured	1 (0.7)	4 (9.1)		0.106	0.01 - 1.04
	Other	7 (5.0))	1 (2.3)		2.970	0.33 - 26.44
	Years employed					
	0-3	9 (6.5)	12 (27.2)	.002**	1.00	-
	4-6	27 (19.4)	10 (22.7)		3.600	1.17 - 11.13
	7-9	36 (25.9)	11 (25.0)		4.364	1.46 - 13.07
	10-12	26 (18.7)	5 (11.4)		6.933	1.91 - 25.18
>12	41 (29.5)	6 (13.6)	9.111		2.70 - 30.77	

** Pearson's Chi-square, * Fisher's exact

Basic arithmetic, knowledge on interest and inflation and basic financial acumen were tested. Basic arithmetic questions were answered correctly by the majority of anaesthetists. A question on inflation was answered incorrectly by 57% of anaesthetists. A question on interest was answered incorrectly by 28% of anaesthetists. The demographic characteristics affecting knowledge on interest and inflation are outlined in Table 5. Self-rated knowledge on financial matters was indicated to be ‘about average’ by 50%, ‘quite low’ by 24% and ‘very low’ by 11% of anaesthetists.

Table 5: Demographic characteristics affecting knowledge on interest and inflation

Indicator Knowledge	Demographic	N (%)		p-value	OR	95% CI
		Correct	Incorrect			
Inflation question	Race					
	Black	11 (14.1)	36 (34.3)	.001*	1.00	-
	White	51 (65.4)	38 (36.2)		4.392	1.98 - 9.73
	Indian	10 (12.8)	24 (22.9)		1.364	.50 - 3.71
	Coloured	2 (2.6)	3 (2.9)		2.182	.32 - 14.77
	Other	4 (5.1)	4 (3.8)		3.273	.70 - 15.29
	Gender					
	Male	40 (50.6)	30 (28.6)	.002**	1.00	-
	Female	39 (49.4)	75 (71.4)		.390	.21 - .72
	Age #					
	16-34	40 (51.3)	69 (65.7)	.006**	1.00	-
	35-49	26 (33.3)	33 (31.4)		1.359	.71 - 2.59
50+	12 (15.4)	3 (2.9)	6.900		1.84 - 25.93	
Interest question	Race					
	Black	27 (20.3)	20 (40.0)	.021*	1.00	-
	White	71 (53.4)	18 (36.0)		2.922	1.35 - 6.35
	Indian	26 (19.5)	8 (16.0)		2.407	.90 - 6.42
	Coloured	2 (1.5)	3 (6.0)		.494	.08 - 3.24
	Other	7 (5.3)	1 (2.0)		5.185	.59 - 45.58

** Pearson’s Chi-square

* Fisher’s exact

Categories with similar results were condensed for ease of reporting

Discussion

Mean financial literacy among anaesthetists in the Wits Department of Anaesthesiology is far higher than the average South African’s score, which is 54 (0-100 scale) [7, 19-21]. The variation across demographic groups for mean financial literacy scores is not wide, with the exception of White anaesthetists scoring higher than Coloured anaesthetists. Gender, age, relationship status and years of employment did not inform any enduring trend with regards to mean financial literacy scores. This is inconsistent with the finding in the SASAS study that found those of the White and Indian minorities scored relatively higher than their Black and Coloured counterparts, those who were older scored higher than their younger counterparts and those who were married scored higher than those who were unmarried [7]. According to the SASAS study and the NIDS study, gender did not play a role in affecting financial literacy. These findings strengthen the statistic that educational attainment is one of the key factors driving overall financial literacy in South Africa [7].

On further analysis of anaesthetists' financial behaviour, it was found that they generally are fiscally responsible, engage in saving practices, are actively involved in household financial management, and research financial decisions before they make them. This indicates good financial control, which is consistent with the average trend of financial control among employed and educated adult South Africans [7]. This is also congruent with studies done on medical doctors in other countries, which found them to be aware of and involved in their personal financial matters [9, 23]. Financial knowledge among anaesthetists is above average in South Africa, with most of them being able to understand basic arithmetic, interest and general financial concepts. This is in keeping as educational attainment was found to be associated with a higher financial knowledge score [7]. Over half of the anaesthetists did not understand the concept of inflation, as it was presented in the questionnaire, indicating a crucial gap in knowledge. Within the financial knowledge domain, it was also found that those who were married, older, White and employed for longer scored higher than their counterparts. This is inconsistent with the SASAS findings where it was found that younger people have generally higher knowledge scores [7].

Despite having good financial control and knowledge anaesthetists do, however, display a lack of confidence in their ability to manage their financial portfolios and plan for their retirement by themselves (without the help of a financial advisor). Similar results were found in studies done on medical doctors from the United States of America, however, they also exhibited mistrust and underuse of financial advisors [9, 23]. In contrast, however, this study found that anaesthetists use financial advisors widely when informing financial decisions. A large proportion of anaesthetists also expressed experiencing financial regret, indicating that their decision making is not always well informed. A large proportion of anaesthetists are not investing in diverse financial products such as unit trusts, shares on the stock exchange and investment policies, but rather, allowing money to accumulate in bank accounts and savings accounts. This is possibly due to a risk averse nature, as found in doctors in other such studies [9]. This practice, however, yields lower long-term returns and consequently inadequate retirement funds.

The study also found that the younger and more junior anaesthetists were investing less; did not hold long term insurance products such as disability cover, medical aid and life insurance; and were not planning sufficiently for retirement by use of retirement annuities, pension funds or provident funds. This finding is in keeping, as it was also hypothesised in the SASAS report that life-cycle efforts have a clear impact on financial planning [7]. This practice is, however, ill-advised because doctors begin their formal medical career on a back-foot due to the length of their degree, educational debt and increased years of specialisation [8, 10]. For this reason, they cannot afford a delay in financial planning at the beginning of their formal employment and should already have an established plan. It was also found that Black and Coloured anaesthetists (as compared to their White and Indian counterparts) experienced more financial shortfall; more regret regarding credit and loans; invested less in unit trusts and shares on the stock exchange; and invested less in financial products as a form of actively saving. This has been an enduring trend throughout the literature regarding financial literacy as South Africa has had a continuous struggle with economic inequality since the end of the apartheid period [5-7]. Unemployment and lack of access to higher education, while improving, still have an effect on the economic growth and empowerment of some population groups [7]. This study, being quantitative in nature, did not look into the individual social backgrounds of each anaesthetist participating in the study. It is important to keep this in mind when interpreting the results as these circumstances would also affect certain results.

Money is one of the most crucial resources which a person accrues and is arguably one of the greatest sources of stress among employees^[3]. Anaesthetists are known to experience high levels of burnout^[14], therefore, equipping them with tools to plan a secure financial future will alleviate the stress of financial concerns. The current literature suggests that a comprehensive financial literacy framework requires a course on personal finance to be delivered at three separate times during a doctor's training i.e. during medical school, residency and fellowship training. In addition to that, an eight to ten-hour course on business finance should also be delivered^[8]. A dedicated curriculum should be developed to teach anaesthetists practically and from a young age about active saving, investing, retirement planning and prudent financial practices. Anaesthetists also need to be continuously educated about financial concepts such as inflation, compounding interest, risk diversification and tax. They should be educated to start planning their financial futures prior to graduation and urged to implement such plans immediately thereafter.

This study has several strengths. The study was conducted in congruence with the SASAS studies, which are reliable and reproducible studies done on a nationwide scale in South Africa^[7, 19-21]. For this reason, some of the data garnered from this study can be reliably compared to the data that already exists in South Africa regarding financial literacy. The inferential and bivariate analyses, done on certain sections strengthens the study and allows us to draw more concise conclusions regarding demographic distributions in various spheres.

Convenience sampling used in this study is a limitation where all anaesthetists were of similar educational and employment backgrounds and all worked for one department in a select field, therefore, these results cannot then be applied to different populations. This is where this study differs from the SASAS study, where larger and more diverse sample populations were used and a wider (more sophisticated) range of statistical analyses were performed on the data^[7, 19-21].

Conclusion

Anaesthetists in the Wits Department of Anaesthesiology have above average financial literacy as compared to the average South African. They do, however, lack financial confidence and preparedness. No particular demographic category predicted a lower mean financial literacy score; however, the young, junior, Coloured and Black anaesthetists do display poorer financial planning behaviour and financial product choices.

In view of the recommendations made by the OECD and studies done on medical students^[8,17,18], it is the author's recommendation that a comprehensive financial literacy programme should be developed targeting anaesthetists in medical school, during specialisation and fellowship training^[8]. In addition, a mandatory course on business finance should also be given in a formal classroom setting with instructors accessible for advice and easily accessible course material^[8]. Further research is recommended to establish if the courses should be examinable as the available literature referred to school-going children^[18]. It is also recommended that an effort be made to tailor this course to suit the needs of anaesthetists in particular.

Declaration

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Author contributions

Protocol development: AN and ZJ; data collection: AN; data analysis: AN; interpretation of results: AN and ZJ; manuscript preparation: AN; manuscript review: AN and ZJ.

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Conflicts of interest

There are no conflicts of interest. (3558 words)

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Appendices

Appendix 1: Proposal and annexures

Assessing financial literacy among anaesthetists in an academic department

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1. Introduction

There are many widely accepted definitions for financial literacy. The Organisation for Economic Co-operation (OECD) defines financial literacy as “a combination of awareness, knowledge, skills, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing” (1). Financial literacy has become a widely accepted and the most commonly used synonym for “financial insight”, “financial culture” and “financial capability” (1). The all-encompassing term goes further to include knowledge of financial products and concepts, having numeracy skills that are adequate for financial management and being actively involved in financial planning. The term also includes the behaviour of seeking advice and assistance with financial matters (2).

Financial literacy, as a concept, is beginning to come into the forefront of study by economists all over the world. The likes of Annamaria Lusardi and Elizabeth Nanziri have published large bodies of literature in the last 10 - 15 years on the developments in this field (3-7). Furthermore, nationwide studies have been conducted in multiple countries to establish overall financial literacy of their respective populations (8). In 2014, the Standard & Poor’s Rating Services conducted a global financial literacy survey (S&P Global FinLit Survey) (8). Prior to this publication, other global-scale initiatives had also been undertaken such as the International Network on Financial Education of the OECD and the Financial Literacy Around the World project. Over and above this, multiple national surveys had also been conducted (8).

The S&P Global FinLit Survey reports the financial literacy of over 140 economies worldwide (8). Furthermore, the study describes the lack of financial literacy in major emerging economies where newer and more complex financial products are becoming available, but knowledge and understanding of these products and the concepts that govern their use remains poor. The report also describes the difference in financial literacy between certain demographic groups, notably: age, gender, income and level of education (8). The most sobering fact reported was that financial literacy was found to be lower by five percentage points in women as compared to men. This finding remained internationally consistent with the exception of South Africa and China, where financial literacy was found to be equally low in both men and women (8). This study found only 42 % of South African adults to be financially literate (8).

Nanziri (3) describes the “theoretical underpinnings” of financial literacy as a mixture of two primary theories. On the one hand there is the school of thought that financial literacy is shaped by an individual’s upbringing, emotions and life experiences. This implies that financial literacy is not learnt. On the other hand, there is the exchange theory which describes knowledge exchange as the primary source of financial literacy. This implies an active learning process. Over and above these two theories is the concept of habit formation, where positive or negative reinforcement determines continuity of behaviour (3).

The fundamental concepts that need to be learnt and understood in order to achieve any level of financial literacy are numeracy, understanding inflation and understanding risk diversification. Lusardi & Mitchell (7) developed a set of three questions, dubbed “the big 3”, which measure the aforementioned skills. The four basic criteria to which these questions complied were: simplicity, relevance, brevity and the capacity to differentiate (table 1). These three questions went on to be incorporated into multiple surveys on financial literacy, some of which were international studies (6, 7).

Table 1. “The big 3” questions, as described by Lusardi & Mitchell (7)

QUESTION	OPTIONS	SKILL TESTED
Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?	<ul style="list-style-type: none"> • More than \$102 • Exactly \$102 • Less than \$102 • Do not know • Refuse to answer 	Numeracy
Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy:	<ul style="list-style-type: none"> • More than • Exactly the same as • Less than today with the money in this account • Do not know • Refuse to answer 	Understanding Inflation

<p>Do you think that the following statement is true or false?</p> <p>‘Buying a single company stock usually provides a safer return than a stock mutual fund.’</p>	<ul style="list-style-type: none"> • True • False • Do not know • Refuse to answer 	<p>Understanding risk diversification</p>
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However, in South Africa a different tool has been used to assess financial literacy. In 2010, an ongoing financial literacy study in South Africa was undertaken using the framework of the OECD initiative. The Financial Services Board commissioned the development of a multi-dimensional questionnaire to measure financial literacy. In collaboration with the Human Sciences Research Council, this tool was first used to pilot a study called the South African Social Attitudes Survey where financial literacy was evaluated in South Africa. This tool is called the financial literacy index (9-12) and will be used in this study.

The way in which this tool differs from the aforementioned 3-question model is that it tests four domains of financial literacy: financial control, financial planning, choosing appropriate products and financial knowledge (11). The multi-dimensionality within this questionnaire allows the complexity of financial literacy to be better captured (11). The questionnaire has been used and adapted in South Africa over five consecutive waves from 2011-2017 (12). This continuity lends to the reliability of this questionnaire as a tool to measure financial literacy in South Africa. Another way in which this tool differs from others, is that it views the possession of a formal financial product, e.g. shares on the stock exchange, as a measure of access rather than financial literacy (3). This means that one who does not possess a financial product is not automatically categorised as financially illiterate.

A mean score of 0-100 was given to each participant, however, there was no minimum score that indicated adequate financial literacy. The overall financial literacy for 2017 in South Africa was a mean score of 54 on a 0-100 scale (12). This number did not differ much from the previous four waves, indicating the tool’s reliability in reproducing similar results over time (9-12). These results are depicted in Table 2.

Table 2. South African Financial Literacy Scores according to SASAS, 2011-2017 (12)

Domain	2011	2012	2013	2015	2017
Financial control	58	61	61	63	62
Financial planning	53	50	48	48	47
Product choice	45	46	44	46	48
Financial knowledge	56	55	56	58	55
Overall financial literacy	54	54	52	55	54

While the average financial literacy score in South Africa may appear to be high, there are wide variations between geographic, demographic and socio-economic groups (3, 4). From these studies, we find the financial literacy profile in South Africa to be as follows: financial literacy is higher in people who are more educated, earn a higher income and are wealthy. It was found that employees in the financial sector were more financially literate as familiarity with financial topics is a prerequisite for these jobs. The studies also observed large differences in financial literacy amongst different racial classifications. They found financial literacy to be low amongst the young and old. There was no difference found in financial literacy between men and women, as it found in many other countries. Furthermore, geographical location also contributes to variation in financial literacy in South Africa with those residing in the Eastern Cape, Mpumalanga, North West and the Northern Cape having lower scores.

Now, more than ever, individuals are required to take control of their own personal finances. With a rising life expectancy, the need for savings and retirement planning also increases. At the same time, financial markets are increasing in diversity and complexity. This overall economic challenge requires greater skill when an individual is navigating their financial course (5).

There is an ever-growing body of evidence that proves the importance of financial literacy in financial decisions and behaviour. Financial literacy has been shown to impact saving and investment behaviour, debt management and borrowing practices. People with higher financial literacy are more likely to accumulate wealth and plan for retirement. Furthermore,

financial literacy has been associated with greater returns on investments and investing in more complex assets. There is also a strong correlation between financial literacy and the ability to cope with emergency expenses. Financially literate people are also less likely to fall into credit card debt (5).

It has also been shown that financial knowledge helps to reduce stress, illness, financial disputes, abuse of children and conflict amongst families. People who come from backgrounds of higher financial literacy tend to have greater psychological well-being and higher levels of productivity. Higher financial literacy also decreases anxiety in the workplace as employees who are financially literate have fewer financial concerns. As financial concerns are quoted as a primary source of stress, an individual's overall satisfaction with their financial wellbeing is improved when their perceived material and non-material needs are being met. Financial well-being has been shown to afford a feeling of safety for an individual (13, 14).

Given South Africa's extremely high levels of income and wealth inequality, financial literacy may become a central policy concern. While South Africa boasts a financial sector with comparable sophistication on an international scale, economic prosperity is not a foregone conclusion. Income wealth inequality in South Africa is amongst the highest in the world (3, 4).

2. Problem Statement

Most doctors complete their training with little to no knowledge on finance or business (15). This, together with other unique challenges, makes doctors a vulnerable population group with regards to financial literacy. Increasing years of specialisation delays earning potential, placing doctors behind their contemporaries who start earning a salary sooner (15). The healthcare sector is also becoming increasingly complex with more regulations and greater competition, making it more difficult to run a successful medical practice. Over and above this, wealth has become more complex to manage in general (15).

In addition to the aforementioned challenges, one of the greatest documented financial challenges faced by doctors is medical education debt (16). With the rising cost of medical education comes a greater amount of debt at the end of medical training. This often

influences both professional and personal decisions made by doctors (16-18). The burden of educational debt also causes a significant amount of stress in the doctor's life. A study done on internal medicine residents showed a positive correlation between rising educational debt and burnout (18).

While not entirely conclusive, there is also a significant body of literature which suggests that rising educational debt impacts the doctor's choice of speciality with individuals aiming for higher-paying specialities and staying away from primary health care (17). Medical student debt influences major life choices such as marriage, having children and buying a house (16). This delay in what is perceived as the natural progression of one's life, often leads to frustration and burnout (16). Anaesthesiologists already experience high levels of burnout (19). A study done within the Wits department of Anaesthesiology found high levels of burnout among 21% of Wits doctors within the department (20). Higher burnout scores were found in women, those who were younger, those who had less experience administering anaesthesia, registrars and those who were writing exams within 3 months of completing the questionnaire (20).

Despite facing what would appear to be a significant challenge, financial literacy amongst doctors remains low (21, 22). A recent study involving a group of residents at the Washington School of Medicine found that they had low financial literacy and investment-risk tolerance, high debt and deficits in financial preparedness (21). A review on the current literature did not identify studies conducted on doctor's financial literacy in South Africa. Given the unique demographic diversity within our healthcare system, a focussed study on this group of doctors could garner very meaningful and useful data.

3. Aim

The aim of this study is to determine financial literacy among doctors in the Wits Department of Anaesthesia.

4. Objectives

The objectives of this study are to:

- Describe overall financial literacy among anaesthetists in the department.
- Describe the demographic characteristics of the sample population.
- Compare financial literacy among different demographic groups within the department.

5. Research Assumptions

The following definitions will be used in the study:

Financial literacy: As defined by the OECD, financial literacy is defined as “a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve financial wellbeing” (1). The average score for financial literacy in South Africa, on a 0-100 scale, is 54 (12).

Financial wellbeing: While there are subjective and objective ways to measure financial wellbeing, in this study it will be defined as a function of material and spiritual aspects of one’s financial status, where a person with high financial wellbeing is satisfied with his or her financial status (13).

Financial concerns: Financial concerns, strongly associated with fear, is the feeling of anxiety that one experiences when one cannot meet his or her financial needs or feels that his or her financial status is not good (13)

Anaesthetist: Any qualified doctor working in the Department of Anaesthesiology including medical officers, registrars, and consultants.

Intern: A doctor who has obtained a medical degree, working under supervision in a training hospital.

Medical officer: A qualified doctor practising in the Department of Anaesthesiology under specialist supervision. Medical officers with 10 or more years of experience are career medical officers and are regarded as consultants.

Registrar: A qualified doctor who is registered with the Health Professional Council of South Africa as a trainee anaesthetist.

Consultant: A specialist anaesthesiologist or career medical officer.

Specialist anaesthesiologist: An anaesthetist who has completed the required Colleges of Medicine of South Africa examinations and who is registered with the Health Professions Council of South Africa.

6. Demarcation of study field

The study will be conducted throughout the Wits Department of Anaesthesiology. The staff comprises approximately 30 interns, 22 medical officers, 112 registrars and 74 consultants. This study will include all doctors working and employed by the following Wits Anaesthesiology sites, namely:

- Charlotte Maxeke Johannesburg Academic Hospital
- Helen Joseph Hospital
- Rahima Moosa Mother and Child Hospital
- Chris Hani Baragwanath Academic Hospital
- Wits Donald Gordon Medical Centre
- Thelle Mogoerane Hospital (satellite site)
- Klerkdorp / Tsepong Hospital Complex (satellite site)

7. Ethical considerations

The Head of Department of Anaesthesiology at Wits has granted approval to conduct the study within the department (Annexure 1). Approval to conduct this study will be obtained from the Human Research Ethics Committee (medical) and the Graduate Studies Committee. The Human Sciences Research Council has also granted approval to use and adapt the financial literacy questionnaire used in the South African Social Attitudes Survey report on financial literacy (Annexure 2).

This study will test knowledge using an anonymous, self-administered questionnaire. Doctors will be invited to participate at departmental sites after receiving an information leaflet explaining the purpose of the study. Participation will be voluntary and consent will be implied upon submission of a completed questionnaire.

Anonymity will be ensured as participants will not be required to provide any personal identifying information. A study number will be allocated to each questionnaire to calculate the response rate. The completed questionnaire will be folded by the participant and placed in a sealed box at the departmental tea rooms. To facilitate social distancing the questionnaire will also be disseminated on a secure online platform together with an information leaflet and brief introduction into the study. The participant's email addresses will be delinked from the questionnaire to maintain anonymity. The data will only be accessible to the researcher and supervisor, ensuring confidentiality. Upon completion of the study, the raw data will be stored in a locked cupboard for six years. The results of the study will be reported to the Head of Department of Anaesthesiology and should the results be poor, suggestions to introduce a financial literacy training program will be made. The study will be conducted in accordance with the Declaration of Helsinki (23) and the South African Guidelines for Good Clinical Practice (24).

8. Data Collection

8.1. Research Design

The research design is the foundational plan for the study which will inform the methods by which the researcher obtains samples, collects data and interprets results (25, 26). This study will be a prospective, contextual and descriptive study.

A prospective study observes outcomes at the time that the study takes place in a specific population (26). This will be a prospective study as data will be collected at departmental academic meetings.

A contextual study is one that refers to a specific group or population defined as a "small-scale world" (27). This study will be conducted on doctors working in the Wits Department of Anaesthesiology.

A descriptive study is one that describes a population's characteristics to answer a specific question (26). This is a descriptive study as knowledge and awareness of financial literacy will be described.

8.2. Study Population

The study population will consist of all doctors working in the Wits Department of Anaesthesiology during the time of data collection.

8.3. Study Sample

8.3.1. Sample Method

Sampling is intended to predict outcomes or trends that can be extrapolated to a larger population (25). The study will use a convenience sampling method. Convenience sampling is described as a non-random sampling of the most easily accessible individuals in the population (26).

8.3.2. Sample Size

The sample size was calculated in consultation with a biostatistician using STATCALC statistical program from the Epiinfo package. The department consists of 74 consultants, 112 registrars, 22 medical officers and 30 interns. The sample size required with 95% confidence interval and a margin of error of 5% is 162. This number is adjusted for a 10% non-response rate. Furthermore, to stratify the population, we will need at least 20 interns, 14 medical officers, 60 registrars and 43 consultants to respond.

8.3.3. Inclusion and exclusion criteria

The inclusion criteria for the study will be:

- All doctors attending departmental meetings who complete a questionnaire
- All doctors who complete the questionnaire online

The exclusion criteria for the study will be:

- Blank Questionnaires

8.4. Collection of data

8.4.1. Development of Questionnaire

The questionnaire used in this study is an adaptation of the original questionnaire developed by the Human Sciences Research Council in collaboration with the Financial Services Board (12). The questionnaire was based on the initial work done by the OECD on financial literacy. It has been used and adapted in four successive waves to assess financial literacy in South Africa. It is a multi-dimensional tool and tests four major domains. This questionnaire has 38 questions, five of which are additional questions on demographics i.e. gender, age category, marital status, years of formal employment and race. (Annexure 3).

8.4.2. Data Collection Process

The data will be collected at departmental sites. The researcher will introduce the study to the doctor and invite them to participate. Every individual who agrees to participate will be given a questionnaire with an information sheet (Annexure 4). Prior to distribution, the questionnaires will be numbered to determine the response rate. During the completion of the questionnaire, the researcher will be present to prevent data contamination and assist with queries. Participants will be encouraged to complete the questionnaire without communicating with anyone around them or searching for answers in anyway.

The questionnaire will take approximately 25 minutes to complete. Once the questionnaire is complete, the participant will be asked to fold it and place it in a sealed box at the departmental tearoom to ensure anonymity. The questionnaire will also be disseminated on a secure online platform to facilitate social distancing. All members of the department will be sent an email via departmental heads with an invitation to participate in the study. The email will contain a brief introduction into the study, the aforementioned information sheet (Annexure 4) and a link to a secure online questionnaire. The questionnaire will be made using REDcap (28). Participants will be encouraged to complete the questionnaire without communicating with anyone or searching for answers in any way. Once the online questionnaire is complete, the participant will submit the questionnaire. The participant's email address will be delinked from the questionnaire to ensure anonymity. The researcher will receive all completed questionnaires via the secure online database.

8.4.3. Data Analysis

Data collected will be captured onto spreadsheets using Microsoft Excel 2019. The statistical program, SPSS, will be used to analyse the data. Descriptive analysis of the categorical data will be expressed as frequency tables and proportions. Comparisons for categorical variables will be done using Chi-square or Fisher exact test. Continuous variables will be described using means and standard deviations or median and interquartile ranges depending on the distribution of the data. Comparisons of demographic variables will be done using either the independent t-test or ANOVA in normally distributed data, or the Mann-Whitney or Kruskal-Wallis test in data that is not normally distributed, depending on the number of groups. Comparisons of different demographics with financial literacy will be done using either the Pearson Chi-Square or Fisher's Exact tests, depending on the distribution of the data. In this study, a p value of <0.05 will be considered statistically significant.

9. Significance of the study

Most doctors complete their training with little to no knowledge on finance or business. This, together with the unique challenge of increasing years of study, delayed earning potential, complex regulations in medical practice, competition in private practice and overall decreased earnings, makes doctors a vulnerable population with regards to financial literacy (15). Doctors also accumulate significant amounts of educational debt related extended periods of medical training. These compounding factors lead to increased stress due to financial concerns (16). Financial concerns have been shown to have a strong relationship with depression, suicide and referral to psychological institutions (13). Financial concerns have been shown to affect self-esteem, satisfaction with marital life and family functioning (13).

Financial literacy in doctors has been proven to be low in other countries (21, 22). A review of the literature suggests that no studies on financial literacy have been done on doctors in South Africa. The current literature suggests that a comprehensive financial literacy framework requires a course on personal finance to be delivered at three separate times

during a doctor's training i.e. during medical school, residency and fellowship training. In addition to that, an 8 – 10-hour course business finance should also be delivered (15). The current medical training programmes in South Africa display deficiencies in this regard. A focussed study on this group of doctors could garner meaningful data and provide motivation for the implementation of an appropriate financial literacy training program for doctors in the department.

10. Validity and reliability of the study

Validity implies that the conclusions of the study are justified based on the design and interpretation. Reliability implies that the measurements have been consistent. The validity and reliability of the study will be maintained by:

- Using an appropriate study design
- Using a questionnaire with face and content validity
- Calculating the sample size in consultation with a biostatistician
- Ensuring that the researcher is present during the data collection process to answer queries and prevent data contamination
- Ensuring that questionnaires will be folded and placed into a sealed box to facilitate confidentiality
- Ensuring that the data will only be accessible to the supervisor and the researcher
- Analysing the data in consultation with a biostatistician

11. Potential limitations of the study

Study limitations are defined as problems with the study. These problems may either be theoretical or methodological, thereby limiting the conclusions that can be made from the results (25).

The contextual nature of this study serves as a limitation as the study is confined to a small group of high-income, specifically medically educated, individuals working at a single university and living in only one province. The results of this study may, therefore, not be generalizable to other populations.

Convenience sampling is also a study limitation as not all doctors in the department attend academic departmental meetings for various reasons.

12. Project outline

	Sep-Dec 2019	Jan- June 2020	July-Dec 2020	Jan-Feb 2021	Mar- Apr 2021
Protocol Submission					
Ethics Approval					
Post grad Approval					
Data Collection					
Data analysis					
Final Write-up					
Submission					

13. Financial Plan

The cost of printing and binding will be covered by the Wits Department of Anaesthesiology.

Description	Price per item	Number of copies	Amount
Paper (questionnaire And information sheet)	R 1 / page	2640	R 2640, 00
Final document	R 150 / copy	3	R 450, 00
Proposal	R 1 / page	210	R 210, 00
Grand total			R 3300, 00

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Annexure 1: Letter from Head of Department of Anaesthesiology



Department of Anaesthesia – University of the Witwatersrand

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Department of Anaesthesia
Area 361
Charlotte Maxeke Johannesburg Academic Hospital

Tel: 011 488-4344

28th April 2020

Subject: **Permission to collect data from Department of Anaesthesiology**

To whom it may concern,

This letter stands to affirm that I, Dr PMV Motshabi, grant permission to Dr Ayesha Noor Mohamed, HPCSA number MP 0794783, to collect data in Department of Anaesthesiology at University of Witwatersrand for her study "Assessing financial literacy among anaesthetists in an academic department".

The approximate period will be, but not limited to, the months of June 2020 to November 2020, until her sample size is obtained. The information obtained from the data will be used for Dr Noor Mohamed research study for her Masters in Medicine only, and will include information and data relevant to her study.

Yours sincerely,

 WITS UNIVERSITY	<p>Dr Palesa Motshabi <i>Academic Head: Department of Anaesthesia</i> <i>Head of Clinical Unit: Cardiac Anaesthesia</i></p> <p>Tel: +27 (0)11 488 4344 Cell: 083 432 1994 Email: palesa.motshabi@wits.ac.za Website: www.wits.ac.za</p>	 WITS SCHOOL OF CLINICAL MEDICINE	 FACULTY OF HEALTH SCIENCES
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Charlotte Maxeke Johannesburg Academic Hospital, 6th Floor, Area 361/16, Jubilee Road, Parktown, Johannesburg

Annexure 2: Letter of permission to use SASAS questionnaire on financial literacy



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Website. www.fscsa.co.za

ENQUIRIES:	Keketso Matlebyane	D. DIALLING NO.:	012 428 8070
OUR REF:	Permission to utilise the HSRC/SASAS questionnaire	FAX:	012 346 6533
DATE:	16 September 2019	E-MAIL:	Keketso.matlebyane@fscsa.co.za

Dr A. Noor Mohamed
UNIVERSITY OF THE WITWATERSRAND
Department of Anaesthesiology
1 Jan Smuts Ave
Johannesburg
2000

Email: 301058@gmail.com

Dear Dr Mohamed

CONSENT TO UTILISE THE SOUTH AFRICAN SOCIAL ATTITUDES SURVEY QUESTIONNAIRE FOR A MASTERS RESEARCH PROJECT

This is to inform you that we have approved your request to utilise the questionnaire developed by the Human Sciences Research Council from our annual South African Social Attitudes Survey. We appreciate your interest in this exceptional study and hope that you will provide your participants with insights on its purpose.

I hope that this approval assists you in attaining the information your research project seeks to uncover. My only requirements are that:

- I have sight of the final revised questionnaire before the field work process ensues; and
- I am provided with a copy of the final research report.

All the best with your research endeavours.

Yours sincerely

LYNDWILL CLARKE
HEAD: CONSUMER EDUCATION DEPARTMENT

Transitional Management Committee:

AM Sithole (Commissioner) DP Tshidi CD da Silva JA Boyd MM du Toit LP Kekana K Gibson OB Makhubela P Mogase

Annexure 3: Questionnaire

Assessing financial literacy among anaesthetists in an academic department

Please can you answer the following questions about your family and money matters.
Please tick the appropriate box:

1. Are you male or female?

Male	
Female	

2. Are you married or unmarried?

Married	
Unmarried	

3. What is your age?

16 – 24 years old	
25 – 34 years old	
35 – 49 years old	
50 – 64 years old	
>65 years old	

4. What is your race?

Black	
White	
Indian	
Coloured	
Other	

5. How many years have you been formally employed? (medical or other)

0-3 years	
4 – 6 years	
7 – 9 years	
10 – 12 years	
>12 years	

6. Who is responsible for day-to-day money management decisions in your household?

You make these decisions yourself	
You make these decisions with someone else	
Someone else makes these decisions	
You do not know	
You refuse to answer this question	

7. Does your household have a budget? A household budget is used to decide what share of your income will be used for spending, saving and paying bills.

Yes	
No	
You do not know	
You refuse to answer this question	

8. Before you buy something, do you carefully consider whether you can afford it?

Always	Often	Sometimes	Seldom	Never	Do not know	Refuse to answer
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9. Do you pay your bills on time?

Always	Often	Sometimes	Seldom	Never	Do not know	Refuse to answer
--------	-------	-----------	--------	-------	-------------	------------------

10. Do you keep a personal watch on you financial affairs?

Always	Often	Sometimes	Seldom	Never	Do not know	Refuse to answer
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11. Do you set long term financial goals and work hard to achieve them?

Always	Often	Sometimes	Seldom	Never	Do not know	Refuse to answer
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12. Sometimes people find that their income does not quite cover their living costs. In the last 12 months, has this happened to you?

Yes	
No	
You do not know	
You refuse to answer the question	

13. If you answered yes to question 12, what did you do to make ends meet and of the below-mentioned options, which ONE does your household rely on MOST to make ends meet? (You may choose more than one option for the first question and ONLY ONE option for the second question)

	What did you do to make ends meet?	Which ONE do you rely on the most?
Draw money out of savings or transfer savings into current account		
Cut back on spending, spend less, do without		
Sell something that I own		
Work overtime, earn extra money		
Borrow food or money from family or friends		
Borrow money from employer/salary advance		
Pawn something that I own		
Take a loan from my savings and loan clubs		
Take money out of a flexible home loan account		
Apply for a loan/withdrawal on pension fund		
Use authorized, arranged overdraft or line credit		
Use credit card for a cash advance or to pay bills/buy food		
Take out a personal loan from a formal financial service provider		
Take out a payday loan (advance on salary from someone not employer)		
Take out a loan from an informal provider/moneylender		
Use unauthorized overdraft		
Pay my bills late; miss payments		
Other (specify)		
You do not know		
You refuse to answer this question		

14. Have you set aside emergency or rainy day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?

Yes	
No	
You do not know	
You refuse to answer this question	

15. I would like to know how much you agree or disagree with the following statements:

	Completely agree	Agree	Neither Nor	Disagree	Completely disagree	Do Not know	Refuse to answer
I find it more satisfying to spend money than to save it for the long term							
I tend to live for today and let tomorrow take care of itself							
Money is there to be spent							
My financial situation limits my ability to do things that are important to me							
I have too much debt right now							

16. In the past 12 months, have you been saving money in any of the following ways? Please do not include pension savings in this question. (You may choose more than one answer)

Building up a balance of money in your bank account	
Put money into a savings account	
Saving cash at home or in your wallet	
Giving money to family to save on your behalf	
Saving in a stokvel or any other informal savings club	
Buying financial investment products, other than pension funds	
Or saving in some other way (including remittances, buying livestock or property)	
You have not been actively saving	
You do not know	
You refuse to answer this question	

17. Overall, on a scale of 1 to 5 where 1 is very confident and 5 is not at all confident; how confident are you that you have done a good job of making financial plans for your retirement?

Your answer from 1-5	
You have not made any retirement plan	
You do not know	
You refuse to answer this question	

18. Please can you tell me whether you have heard of any of the following banking products and how many of them you currently hold.

	I have heard of this banking product	I currently hold this banking product
Mzansi account		
Savings account		
Current or cheque account		
Fixed deposit bank account		
ATM card		
Debit card or Check card		
Credit card		
Garage card or petrol card		
Home loan from a big bank		
Post office/ Post bank savings account		
Cell phone account (e.g. M-PESA)		
Other bank product		
None of the above		
You refuse to answer this question		
You do not know		

19. Please can you tell me whether you have heard of any of the following types of credit or loans and how many of them you currently hold.

	I have heard of this type of credit or loan	I currently hold this type of credit or loan
Formal credits and loans		
Loan from a microlender		
Vehicle or car finance through bank or dealer		
Overdraft facility		
Store card where you buy on account and pay later e.g. Edgars		
Lay-bye		
Hire Purchase (HP)		
Informal credit loans		
Loan from friends or family		
Loan from an informal money lender		
Loan from a stokvel/umgalelo or savings club		
Loan from local spaza		
Store account with no credit where you pay later		
Loan from an employer		
None of the above		
You do not know		
You refuse to answer this question		

20. Please can you tell me whether you have heard of any of the following types of investments or savings products and how many of them you currently hold.

	I have heard of this investment or savings product	I currently hold this investment or savings product
Formal Product		
Unit trusts		
Education policy or plan		
Investment or savings policy		
Shares on the stock exchange		
Retirement products		
Retirement annuity		
Provident fund		
Pension fund		
Savings clubs		
Stokvel/ umgalelo / savings clubs		
Giving money to someone to keep it safe		
Keep cash or savings at home		
Other savings club		
None of the above		
You do not know		
You refuse to answer this question		

21. Please can you tell me if you have heard of any of the following types of insurance products and whether you currently hold any of them.

	I have heard of this insurance product	I currently hold this insurance product
Short-term (asset) insurance		
Vehicle or car insurance		
Household contents insurance		
Homeowners' insurance on building		
Cell phone insurance		
Long-term insurance		
Life insurance or life cover		
Insurance that pays your loan		
Disability insurance or cover		
Medical aid scheme		
Hospital cash plan		
Funeral		
Belong to a burial society		
Funeral policy with a bank		
Funeral cover through an undertaker		
Funeral policy with an insurance company		
Funeral cover from a spaza shop		
Funeral cover from any other source		
None of the above		
You do not know		
You refuse to answer the question		

22. How much do you agree or disagree with the following statements?

	Totally agree	Tend to agree	Tend to disagree	Totally disagree	You don't know	Not applicable	You refuse to answer
I've got a clear idea of the sorts of financial products or services that I need without consulting a financial advisor							
I always research my choices thoroughly before making any decisions about							

financial products or services							
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23. In the last 12 months, have you made a decision about any of the following that you later regretted? (You may choose more than one answer)

Savings or investments	
Taking out a home loan	
Taking out a loan or credit agreement	
Insurance of any type	
Tax	
Managing credit/debt	
None of the above	
You do not know	
You refuse to answer this question	

24. Within the last five years, have you discovered that you had been paying for a financial product that was clearly unsuitable for your needs? (This would include formal and informal products, covering savings, investments, credit or loans, as well as insurance)

Yes	
No	
You do not know	
You refuse to answer this question	

25. Which one of the following statements best describes how well you (and your partner) are keeping up with your bills and credit commitments at the moment?

Keeping up with all bills and commitments without any difficulties	
Keeping up with all bills and commitments, but it is a struggle from time to time	
Keeping up with all bills and commitments, but it is a constant struggle	
Falling behind with some bills or credit commitments	
Having real financial problems and have fallen behind with many bills or credit	
Don't have any bills or credit commitments	
You do not know	
You refuse to answer this question	

26. How would you rate your current credit score?

Very bad	
Bad	
About average	

Good	
Very good	
You do not know	
You refuse to answer this question	

27. Which, if any, of these things do you personally keep an eye on? (you may choose more than one answer)

Changes in the housing market	
Changes in the stock market	
Changes in interest rates	
Changes in inflation	
Changes in taxation, e.g. income tax, capital gains tax	
Changes in the job market	
Changes in state pension, benefits and tax credits	
Best buys in financial products	
None of these	
You do not know	
You refuse to answer this question	

28. Could you tell me how you would rate your overall knowledge about financial matters compared with other adults in South Africa?

Very high	
Quite high	
About average	
Quite low	
Very low	
You do not know	
You refuse to answer this question	

29. Imagine that five friends are given a gift of R1 000. If the friends have to share the money equally how much does each one get?

Your answer in Rands	R
You do not know	
You refuse to answer this question	

30. Now imagine the friends have to wait for one year to get their share of the R1 000 and inflation remains the same. In one year's time they will be able to buy:

More with their share of the money than they could today	
The same amount	
Less than they could buy today	
It depends on the types of things they want to buy	
You do not know	
You refuse to answer this question	

31. You lend R25 to a friend one evening and he gives you R25 back the next day. How much interest has he paid on this loan?

Your answer in Rands	R
You do not know	
You refuse to answer this question	

32. Suppose you put R100 into a savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?

More than R110	
Exactly R110	
Less than R110	
It is impossible to tell with the information given	
You do not know	
You refuse to answer this question	

33. Do you think each of the following statements are true or false?

	True	False	Don't know	You refuse to answer
If someone offers you the chance to make a lot of money, it is likely that there is a chance that you will lose a lot of money				
High inflation means that the cost of living is increasing rapidly				
It is less likely that you will lose all of your money if you save it in more than one place				

34. Which one of the following can hurt your credit rating?

Making late payments on loans and debts	
Staying in one job too long	
Living in the same location too long	
Using your credit card frequently for purchases	
You do not know	
You refuse to answer this question	

35. What can affect the amount of interest that you would pay on a loan? (one option)

Your credit rating	
How much you borrow	
How long you take to repay the loan	
All of the above	
You do not know	
You refuse to answer	

36. People get information about financial investments from many sources. What sources do you feel most influence your decision about the financial investments you make? (one option)

Advertisements	
Magazines	
Newspapers	
Radio or television	
Internet	
Advice from a financial advisor	
Advice from a knowledgeable friend	
Other – specify	
None of the above	
You do not know	
You refuse to answer this question	

37. Thinking about what you’ve learned about personal finance, where do you think that you learned the most? (one option)

From your parents or at home	
From the internet	

From a financial professional	
From self-help books or media	
From school	
At work	
From friends	
Spouse or partner	
Learned by yourself	
None of these / other	
You do not know	
You refuse to answer this question	

Annexure 4: Information Sheet

Study title: Assessing financial literacy among anaesthetists in an academic department

Dear Colleague

I am a registrar working the Wits Department of Anaesthesiology, and I am currently conducting a study for my Masters of Medicine. I would like to invite you to participate in my research study titled: Assessing financial literacy among anaesthetist in an academic department. By assessing financial literacy in our department, deficiencies can be identified and appropriate personal finance training can be provided as part of holistic training for professionals.

Participation is completely voluntary and consent will be implied on completion of this self-administered questionnaire. The questionnaire is anonymous. Numbering of questionnaires is to enable the calculation of response rate. Confidentiality will be maintained as only the researcher and supervisor will have access to the raw data. Should you wish not to participate, you can withdraw from study at any time prior to submission of the questionnaire. No incentives will be provided for the completion of the questionnaire. No risk will be incurred by you or the department if you complete this questionnaire. Please do not communicate with anyone around you during completion of this questionnaire.

All questionnaires, whether complete or not, should be folded and placed in the sealed box at the door of the meeting room. Please ensure that you understand the above information prior to completion of the questionnaire. Should you have any questions regarding this study, please contact me, Dr A Noor Mohamed (0725029980) or my supervisor, Dr Z Jooma (0114884344). The final report can be assessed at the Wits Institutional Repository environment on Dspace (WIReDSpace) at www.wiredspace.wits.ac.za

Permission to conduct the study was obtained from the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg. This committee serves to safeguard the rights and dignity of all human subjects who agree to participate in a research project and to promote the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Thank you for taking time to read this letter.

Dr A Noor Mohamed
072 502 9980
301058@gmail.com

Appendix 2: Postgraduate Studies letter of approval



Private Bag 3 Wits, 2050

Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

28 October 2020
Person No: 301058
PAG

Dr A Noor Mohamed
P O Box 253
Carolina
1185
South Africa

Dear Dr Ayesha Noor Mohamed

Master of Medicine in Anaesthesia: Approval of Title

We have pleasure in advising that your proposal entitled *Assessing financial literacy among anaesthetists in an academic department*. has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Sandra Benn', with a horizontal line underneath.

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences



Appendix 3: Human Research Ethics Council letter of clearance



R14/49 Dr Ayesha Noor Mohamed

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) CLEARANCE CERTIFICATE NO. M200626

NAME: Dr Ayesha Noor Mohamed
(Principal Investigator)
DEPARTMENT: Anaesthesiology
University of the Witwatersrand

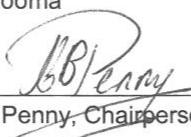
PROJECT TITLE: Assessing financial literacy among anaesthetists in an
academic department

DATE CONSIDERED: 26/06/2020

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Dr Z. Jooma

APPROVED BY: 
Dr CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 04/08/2020

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the Third Floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.** The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in **June** and will therefore be due in the month of **June** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature

Date

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix 4: Author guidelines for the South African Medical Journal

Author Guidelines

The *SAMJ* has launched a new submission and tracking system. Authors will be required to register a profile on the Editorial Manager platform in order to submit a manuscript.

To submit a manuscript, please proceed to the *SAMJ* Editorial Manager website:
www.editorialmanager.com/samj

To access and submit an article already in production, please see the guidelines here.

Author Guidelines

Please view the Author Tutorial for guidance on how to submit on Editorial Manager.

Please take the time to familiarise yourself with the policies and processes below. If you still have any questions, please do not hesitate to ask our editorial staff (tel.: +27 (0)21 532 1281, email: submissions@hmpg.co.za).

SAMJ policies

Types of articles considered by the SAMJ

Article Processing Charges

Authorship

Conflict of interest

Research ethics committee approval

Clinical trials

Protection of patient's rights to privacy

Copyright notice

Privacy statement

Ethnic classification

CPD

Manuscript preparation

Preparing an article for anonymous review

General article format/layout

Preparation notes by article type

Illustrations

Tables

References

From submission to acceptance

Submission and peer-review

Production process

Changing contact details or authorship

Publication

Online versus print

Errata and retractions

Indexing

SAMJ Policies

Type of articles considered by the SAMJ

The *SAMJ* will no longer limit the articles accepted to those that have ‘general medical content’, but is intending to capture the spectrum of medical and health sciences, grouped by relevance to the country’s burdens of disease. This content will include research in the social sciences and economics that is relevant to the medical issues around our burden of disease. Please see ‘A new vision for the *SAMJ* – and a call for papers’ for a full discussion of the new directions for the *SAMJ*.

We accept the following types of articles:

Research

Reviews

Clinical trials

Editorials

In Practice (Previously Forum incl. Case Reports)

Correspondence

Obituaries

Book reviews

Ad hoc supplements e.g. guidelines, conference/congress abstracts, Festschrifts*

The following articles are by invitation only:

Guest editorial

Continuing Medical Education (CME)

*Contact claudian@hmpg.co.za for information on submitting ad hoc/commissioned supplements, including guidelines, conference/congress abstracts, Festschrifts, etc.

Publication Fees

All articles published in the *South African Medical Journal* are open access and freely available online upon publication. This is made possible by applying a business model to offset the costs of peer review management, copyediting, design and production, by charging a publication fee of R5 731.95 (ex vat) for each research article published. The charge applies only to **Research** articles submitted after 1 March 2017. The publication fee is standard and does not vary based on length, colour, figures, or other elements.

When submitting a Research article to the *SAMJ*, the submitting author must agree to pay the publication fee should the article be accepted for publication. The publication fee is payable when your manuscript is editorially accepted and before production commences for publication. The submitting author will be notified that payment is due and given details on the available methods of payment. Prompt payment is advised; the article will not enter into production until payment is received.

Queries can be directed to claudian@hmpg.co.za.

Please refer to the section on ‘Sponsored Supplements’ regarding the publication of supplements, where a charge is applicable. Queries can be directed to dianes@hmpg.co.za or claudian@hmpg.co.za

Authorship

Named authors must consent to publication. Authorship should be based on: (i) substantial contribution to conceptualisation, design, analysis and interpretation of data; (ii) drafting or critical revision of important scientific content; or (iii) approval of the version to be published. These conditions must all be met (uniform requirements for manuscripts submitted to biomedical journals; refer to www.icmje.org)

If authors' names are added or deleted after submission of an article, or the order of the names is changed, all authors must agree to this in writing.

Please note that co-authors will be requested to verify their contribution upon submission. Non-verification may lead to delays in the processing of submissions. Author contributions should be listed/described in the manuscript.

Conflicts of interest

Conflicts of interest can derive from any kind of relationship or association that may influence authors' or reviewers' opinions about the subject matter of a paper. The existence of a conflict – whether actual, perceived or potential – does not preclude publication of an article. However, we aim to ensure that, in such cases, readers have all the information they need to enable them to make an informed assessment about a publication's message and conclusions. We require that both authors and reviewers declare all sources of support for their research, any personal or financial relationships (including honoraria, speaking fees, gifts received, etc) with relevant individuals or organisations connected to the topic of the paper, and any association with a product or subject that may constitute a real, perceived or potential conflict of interest. If you are unsure whether a specific relationship constitutes a conflict, please contact the editorial team for advice. If a conflict remains undisclosed and is later brought to the attention of the editorial team, it will be considered a serious issue prompting an investigation with the possibility of retraction.

Research ethics committee approval

Authors must provide evidence of Research Ethics Committee approval of the research where relevant. Ensure the correct, full ethics committee name and reference number is included in the manuscript.

If the study was carried out using data from provincial healthcare facilities, or required active data collection through facility visits or staff interviews, approval should be sought from the relevant provincial authorities. For South African authors, please refer to the guidelines for submission to the National Health Research Database. Research involving human subjects must be conducted according to the principles outlined in the Declaration of Helsinki. Please refer to the National Department of Health's guideline on Ethics in Health research: principles, processes and structures to ensure that the appropriate requirements for conducting research have been met, and that the HPCSA's General Ethical Guidelines for Health Researchers have been adhered to.

Clinical trials

As per the recommendations published by the International Committee of Medical Journal Editors (ICMJE), clinical trial research is any research that assigns individuals to an intervention, with or without a concurrent comparison/control group to study the cause-and-effect relationship between the intervention and health outcomes. All clinical trials should be registered with the appropriate national clinical trial registry (or any international primary

register, if relevant), and the trial registration number should be cited at the end of the abstract. All clinical trial reports must also contain a data sharing statement as per the recommendations of the ICMJE. Statements are to indicate:
whether individual deidentified participant data will be shared;
what data in particular will be shared; whether additional, related documents will be available;
when the data will become available and for how long; by what access criteria data will be shared.

Please see the ICMJE announcement for further details and illustrative examples of data sharing statements: [ICMJE Data Sharing Statements for Clinical Trials](#)

Since 1st December 2005, all clinical trials conducted in South Africa have been required to be registered in the South African National Clinical Trials Register. The SAMJ therefore requires that clinical trials be registered in the relevant public trials registry at or before the time of first patient enrolment as a condition for publication. The trial registry name and registration number must be included in the manuscript.

Please refer to the general guidelines for all papers at the top of this article for additional requirements with respect to ethics approval, funding, author contributions, etc. The format of original research articles should be followed for reporting of clinical trial results.

Patient Consent

Information that would enable identification of individual patients should not be published in written descriptions, photographs, and pedigrees unless the information is essential for scientific purposes and the patient (or parent or guardian) has given informed written consent for publication and distribution. We further recommend that the published article is disseminated not only to the involved researchers but also to the patients/participants from whom the data was drawn. Refer to Protection of Research Participants. The signed consent form should be submitted with the manuscript to enable verification by the editorial team.

Other individuals

Any individual who is identifiable in an image must provide written agreement that the image may be used in that context in the *SAMJ*.

Copyright notice

Copyright remains in the Author's name. The work is licensed under a Creative Commons Attribution – Non-commercial Works License. Authors are required to complete and sign an Author Agreement form that outlines Author and Publisher rights and terms of publication. The Author Agreement form should be uploaded along with other submissions files and any submission will be considered incomplete without it.

Material submitted for publication in the *SAMJ* is accepted provided it has not been published or submitted for publication elsewhere. Please inform the editorial team if the main findings of your paper have been presented at a conference and published in abstract form, to avoid copyright infringement. All research already published as 'Conference proceedings' needs to be substantially re-written, with a new title, a new abstract and new and important results to back up any study before it will be considered for a new publication. The *SAMJ* does not hold itself responsible for statements made by the authors.

Previously published images

If an image/figure has been previously published, permission to reproduce or alter it must be obtained by the authors from the original publisher and the figure legend must give full credit to the original source. This credit should be accompanied by a letter indicating that permission to reproduce the image has been granted to the author/s. This letter should be uploaded as a supplementary file during submission.

Privacy statement

The *SAMJ* is committed to protecting the privacy of its website and submission system users. The names, personal particulars and email addresses entered in the website or submission system will not be made available to third parties without the user's permission or due process. By registering to use the website or submission system, users consent to receive communication from the *SAMJ* or its publisher SAMA on matters relating to the journal or associated publications. Queries with regard to privacy may be directed to publishing@hmpg.co.za.

Ethnic/race classification

Use of racial or ethnicity classifications in research is fraught with problems. If you choose to use a research design that involves classification of participants based on race or ethnicity, or discuss issues with reference to such classifications, please ensure that you include a detailed rationale for doing so, ensure that the categories you describe are carefully defined, and that socioeconomic, cultural and lifestyle variables that may underlie perceived racial disparities are appropriately controlled for. Please also clearly specify whether race or ethnicity is classified as reported by the patient (self-identifying) or as perceived by the investigators. Please note that it is not appropriate to use self-reported or investigator-assigned racial or ethnic categories for genetic studies.

Continuing Professional Development (CPD)

SAMJ is an HPCSA-accredited service provider of CPD materials. Principal authors can earn up to 15 CPD continuing education units (CEUs) for publishing an article; co-authors are eligible to earn up to 5 CEUs; and reviewers of articles can earn 3 CEUs. Each month, *SAMJ* also publishes a CPD-accredited questionnaire relating to the academic content of the journal. Successful completion of the questionnaire with a pass rate of 70% will earn the reader 3 CEUs. Administration of our CPD programme is managed by Medical Practice Consulting. To complete questionnaires and obtain certificates, please visit MRP Consulting

Manuscript preparation

Preparing an article for anonymous review

To ensure a fair and unbiased review process, all submissions are to include an anonymised version of the manuscript. The exceptions to this are Correspondence, Book reviews and Obituary submissions.

Submitting a manuscript that needs additional blinding can slow down your review process, so please be sure to follow these simple guidelines as much as possible:

An anonymous version should not contain any author, affiliation or particular institutional details that will enable identification.

Please remove title page, acknowledgements, contact details, funding grants to a named person, and any running headers of author names.
Mask self-citations by referring to your own work in third person.

General article format/layout:

Accepted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction, which will delay publication.

General:

Manuscripts must be written in UK English.

The manuscript must be in Microsoft Word format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes).

Please make your article concise, even if it is below the word limit.

Qualifications, **full** affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript and in the online submission process.

Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.

Include sections on Acknowledgements, Conflict of Interest, Author Contributions and Funding sources. If none is applicable, please state 'none'.

Scientific measurements must be expressed in SI units except: blood pressure (mmHg) and haemoglobin (g/dL).

Litres is denoted with an uppercase L e.g. 'mL' for millilitres).

Units should be preceded by a space (except for % and °C), e.g. '40 kg' and '20 cm' but '50%' and '19°C'.

Please be sure to insert proper symbols e.g. μ not u for micro, α not a for alpha, β not B for beta, etc.

Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160.

Quotes should be placed in single quotation marks: i.e. The respondent stated: '...'

Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.

If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the *only* exception. Please DO NOT use fill, format lines and so on.

SAMJ is a generalist medical journal, therefore for articles covering genetics, it is the responsibility of authors to apply the following:

- Please ensure that all genes are in italics, and proteins/enzymes/hormones are not.

- Ensure that all genes are presented in the correct case e.g. TP53 not Tp53.

****NB:** Copyeditors cannot be expected to pick up and correct errors wrt the above, although they will raise queries where concerned.

- Define all genes, proteins and related shorthand terms at first mention, e.g. '188del11' can be glossed as 'an 11 bp deletion at nucleotide 188.'

- Use the latest approved gene or protein symbol as appropriate:

Human Gene Mapping Workshop (HGMW): genetic notations and symbols

HUGO Gene Nomenclature Committee: approved gene symbols and nomenclature

OMIM: Online Mendelian Inheritance in Man (MIM) nomenclature and instructions

Bennet et al. Standardized human pedigree nomenclature: Update and assessment of the recommendations of the National Society of Genetic Counsellors. *J Genet Counsel*

2008;17:424-433: standard human pedigree nomenclature.

Preparation notes by article type

Research

Editorials

CME

In Practice and Case reports

Reviews

Clinical trials

Correspondence

Obituaries

Book reviews

Guidelines

Research

Guideline word limit: 4 000 words

Research articles describe the background, methods, results and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question, and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are: to fill a gap in the literature, a logical extension of previous work, or to answer an important clinical question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Results should describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section, which should consider primary outcomes first before any secondary or tertiary findings or post-hoc analyses. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

Select figures and tables for your paper carefully and sparingly. Use only those figures that provided added value to the paper, over and above what is written in the text. Do not replicate data in tables and in text.

Structured abstract

This should be 250-400 words, with the following recommended headings:

Background: why the study is being done and how it relates to other published work.

Objectives: what the study intends to find out

Methods: must include study design, number of participants, description of the intervention, primary and secondary outcomes, any specific analyses that were done on the data.

Results: first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.

Conclusion: must be supported by the data, include recommendations for further study/actions.

Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors.

Do not include any references in the abstracts.

Main article

All articles are to include the following main sections: Introduction/Background, Methods, Results, Discussion, Conclusions.

The following are additional heading or section options that may appear within these:

Objectives (within Introduction/Background): a clear statement of the main aim of the study and the major hypothesis tested or research question posed

Design (within Methods): including factors such as prospective, randomisation, blinding, placebo control, case control, crossover, criterion standards for diagnostic tests, etc.

Setting (within Methods): level of care, e.g. primary, secondary, number of participating centres.

Participants (instead of patients or subjects; within Methods): numbers entering and completing the study, sex, age and any other biological, behavioural, social or cultural factors (e.g. smoking status, socioeconomic group, educational attainment, co-existing disease indicators, etc) that may have an impact on the study results. Clearly define how participants were enrolled, and describe selection and exclusion criteria.

Interventions (within Methods): what, how, when and for how long. Typically for randomised controlled trials, crossover trials, and before and after studies.

Main outcome measures (within Methods): those as planned in the protocol, and those ultimately measured. Explain differences, if any.

Results

Start with description of the population and sample. Include key characteristics of comparison groups.

Main results with (for quantitative studies) 95% confidence intervals and, where appropriate, the exact level of statistical significance and the number need to treat/harm. Whenever possible, state absolute rather than relative risks.

Do not replicate data in tables and in text.

If presenting mean and standard deviations, specify this clearly. Our house style is to present this as follows:

E.g.: The mean (SD) birth weight was 2 500 (1 210) g. Do not use the \pm symbol for mean (SD).

Leave interpretation to the Discussion section. The Results section should just report the findings as per the Methods section.

Discussion

Please ensure that the discussion is concise and follows this overall structure – sub-headings are not needed:

Statement of principal findings

Strengths and weaknesses of the study

Contribution to the body of knowledge

Strengths and weaknesses in relation to other studies

The meaning of the study – e.g. what this study means to clinicians and policymakers

Unanswered questions and recommendations for future research

Conclusions

This may be the only section readers look at, therefore write it carefully. Include primary conclusions and their implications, suggesting areas for further research if appropriate. Do not go beyond the data in the article.

Editorials

Guideline word limit: 1 000 words

These opinion or comment articles are usually commissioned but we are happy to consider and peer review unsolicited editorials. Editorials should be accessible and interesting to readers without specialist knowledge of the subject under discussion and should have an element of topicality (why is a comment on this issue relevant now?) There should be a clear message to the piece, supported by evidence.

Please make clear the type of evidence that supports each key statement, e.g.:

expert opinion

personal clinical experience

observational studies

trials

systematic reviews.

CME (by invite only)

CME is intended to provide readers with practical, up-to-date information on medical and related matters. It is aimed at those who are not specialists in the field.

From January 2016, all CME articles will be printed in full in the *SAMJ*. Please try to adhere strictly to the guidelines on word count as we have a page limit for the print issue of the *SAMJ*. We reserve the right to place some tables and reference lists online if this is necessary for space.

In practice, this means that each CME topic usually covers two issues of the print issue of the *SAMJ*.

The guest editor, in consultation with the editor, is responsible for convening a team of authors, deciding on the subjects to be covered and for reviewing the manuscripts submitted. The suggestion is for 4 - 5 articles, although there is some room for flexibility contingent on discussions with the editor.

For queries about these guidelines please feel free to contact the CME editor, Dr Bridget Farham, by email (ugqirha@iafrica.com) or telephone (+27 (0)82 452 2860)

Review process

The guest editor reviews the articles and returns them to the CME editor for review and final approval.

Guest editorials

Guideline word limit: 1 000 words

Include the guest editor's personal details (qualifications, positions, affiliation, e-mail address, and a short personal profile (50 words)).

If possible, include a photograph of the author(s) at high enough resolution for print. It is preferable to provide two guest editorials, one for each issue, so that the content of the articles in each issue is covered.

Articles

Guideline word limit: 2 000 - 3 000 words

Each article requires an abstract of ± 200 words.

The editor reserves the right to shorten articles but will send a substantially shortened article back for author approval.

Personal details

Please supply: Your qualifications, position and affiliations and MP number (used for CPD points); Address, telephone number and fax number, and your e-mail address; and a short personal profile (50 words) and a few words about your current fields of interest.

In Practice

Guideline word limit: 2 000 - 3 000 words

This section includes articles that would previously have been accepted into the Forum section, and case reports.

In practice articles are those that draw attention to specific issues of clinical, economic or political interest regarding medicine and healthcare in southern Africa. They are assigned to a topic:

- Case report
- Clinical practice
- Clinical alert
- Issues in medicine
- Issues in public health
- Healthcare delivery
- Medicine and the environment
- Medicine and the law
- Cochrane corner

An In Practice article should follow the following format – sub-headings are not necessary, but may be used for clarity:

Author affiliations and qualifications: to be the same as for Research. Provide all authors' names and initials, qualifications and full affiliations, and corresponding author.

Short abstract: does not need to be structured, but should capture the essential features of the article

Introduction: the reason for the article and the issue being addressed

Recent research, discussion, local policy around the issue – include your own research where appropriate

All statements should be referenced and, if opinion only, this should be stated

Discussion: how this article adds to the discussion around a particular topic

If a clinical practice or policy point is at issue, this needs to be emphasised, using a box with highlights if appropriate.

Essentially In practice is an opportunity for a more discursive approach to topics of clinical, economic or political importance in southern African health systems. It is not an opportunity to put forward unsubstantiated opinions!

Case reports

The *SAMJ* has recently started to accept case reports. The cases must come from Africa, preferably southern Africa unless the condition is common to all African countries, and must be either a completely new description of a clinical condition or result (use Google!) or a case that highlights important practice or management issues.

Please use the following format for case reports:

Title of case: do not include the words 'a case report' in the title

Summary/abstract: up to 150 words summarising the case presentation and outcome
Background: why is this case important and why did you write it up?
Case presentation: presenting features, medical, social, family history as appropriate
Case management: should be according to best practice, and if not, please explain why
Investigations, if relevant: save space by simply saying 'normal' if, for example, renal function was completely normal, rather than listing normal results, highlight the abnormal – or indeed the normal if this is clinically significant
Differential diagnosis, if relevant
Treatment, if relevant
Outcome and follow-up
Discussion – a VERY BRIEF review of similar published cases
Teaching points: 3 - 5 bullet points
References: as per the *SAMJ* house style
Tables and figures: keep to a minimum. Use clinical images where relevant – we need hi-res versions for print, and identifiable persons must have a consent form
Patient consent: please include a statement about patient consent to a written case report. This should be uploaded as a supplementary file.

Clinical trials

Guideline word limit: 4000 words

As per the recommendations published by the International Committee of Medical Journal Editors (ICMJE), clinical trial research is any research that assigns individuals to an intervention, with or without a concurrent comparison/control group to study the cause-and-effect relationship between the intervention and health outcomes. All clinical trials should be registered with the appropriate national clinical trial registry (or any international primary register, if relevant), and the trial registration number should be cited at the end of the abstract. Since 1st December 2005, all clinical trials conducted in South Africa have been required to be registered in the South African National Clinical Trials Register. The *SAMJ* therefore requires that clinical trials be registered in the relevant public trials registry at or before the time of first patient enrolment as a condition for publication. The trial registry name and registration number must be included in the manuscript.

Please refer to the general guidelines for all papers at the top of this article for additional requirements with respect to ethics approval, funding, author contributions, etc. The format of original research articles should be followed for reporting of clinical trial results.

Review articles

Guideline word limit: 4 000 words

These are welcome, but should be either commissioned or discussed with the Editor before submission. A review article should provide a clear, up-to-date account of the topic and be aimed at non-specialist hospital doctors and general practitioners.

Please ensure that your article includes:

Abstract: unstructured, of about 100-150 words, explaining the review and why it is important

Methods: Outline the sources and selection methods, including search strategy and keywords used for identifying references from online bibliographic databases. Discuss the quality of evidence.

When writing: clarify the evidence you used for key statements and the strength of the evidence. Do not present statements or opinions without such evidence, or if you have to, say that there is little or no evidence and that this is opinion. Avoid specialist jargon and abbreviations, and provide advice specific to southern Africa.

Personal details: Please supply your qualifications, position and affiliations and MP number (used for CPD points); address, telephone number and fax number, and your e-mail address; and a short personal profile (50 words) and a few words about your current fields of interest.

Correspondence (Letters to the Editor)

Guideline word limit: 500 words

Letters to the editor should relate either to a paper or article published by the SAMJ or to a topical issue of particular relevance to the journal's readership

May include only one illustration or table
Must include a correspondence address.

Book reviews

Guideline word limit: 400 words

Should be about 400 words and must be accompanied by the publication details of the book. Provide a hi-res image of the cover if possible (with permission from the copyright holder).

Obituaries

Guideline word limit: 400 words

Should be offered within the first year of the practitioner's death, and may be accompanied by a photograph.

Guidelines

Guidelines should always be discussed with the Editor prior to submission.

Because of the intensive review process required to ensure Guidelines are independent, evidence-based and free from commercial bias, they are usually published as a supplement to the *SAMJ*, the costs of which must be covered by sponsorship, advertising or payment by the guideline authors/association. We will provide a quote based on the expected length of the guideline and whether it is to appear online only, or in print, which must be accepted by the body putting the guidelines together before submitting the work to the SAMJ.

The Editor reserves the right to determine the scheduling of supplements. Understandably, a delay in publication must be anticipated dependent upon editorial workflow.

All guidelines should include a clear, transparent statement about all sources of funding and an explicit, clear statement of conflicts of interest of any of the participants in the guidelines about industry funding for lectures, research, conference participation etc.

All guidelines should be structured according to Agree II.

Please access this website before putting the guidelines together, download the Agree 11 instrument and use this to put the guidelines together.

All submitted guidelines will be sent to the local Agree II appraisal committee for review and must be endorsed by an appropriate body prior to consideration and all conflicts of interest expressed.

A structured abstract not exceeding 400 words (recommended sub-headings: *Background, Recommendations, Conclusion*) is required. Sections and sub-sections must be numbered consecutively (e.g. 1. Introduction; 1.1 Definitions; 2.etc.) and summarised in a Table of Contents.

Illustrations/photos/scans

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Rather:

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Journal references: Price NC, Jacobs NN, Roberts DA, et al. Importance of asking about glaucoma. *Stat Med* 1998;289(1):350-355. <http://dx.doi.org/10.1000/hgjr.182>

Book references: Jeffcoate N. Principles of Gynaecology. 4th ed. London: Butterworth, 1975:96-101.

Chapter/section in a book: Weinstein L, Swartz MN. Pathogenic Properties of Invading Microorganisms. In: Sodeman WA, Sodeman WA, eds. Pathologic Physiology: Mechanisms of Disease. Philadelphia: WB Saunders, 1974:457-472.

Internet references: World Health Organization. The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Geneva: WHO, 2002. <http://www.who.int/whr/2002> (accessed 16 January 2010).

Legal references

- Government Gazettes:

National Department of Health, South Africa. National Policy for Health Act, 1990 (Act No. 116 of 1990). Free primary health care services. Government Gazette No. 17507:1514. 1996. In this example, 17507 is the Gazette Number. This is followed by :1514 - this is the notice number in this Gazette.

- Provincial Gazettes:

Gauteng Province, South Africa; Department of Agriculture, Conservation, Environment and Land Affairs. Publication of the Gauteng health care waste management draft regulations. Gauteng Provincial Gazette No. 373:3003, 2003.

- Acts:

South Africa. National Health Act No. 61 of 2003.

- Regulations to an Act:

South Africa. National Health Act of 2003. Regulations: Rendering of clinical forensic medicine services. Government Gazette No. 35099, 2012. (Published under Government Notice R176).

- Bills:

South Africa. Traditional Health Practitioners Bill, No. B66B-2003, 2006.

- Green/white papers:

South Africa. Department of Health Green Paper: National Health Insurance in South Africa. 2011.

- Case law:

Rex v Jopp and Another 1949 (4) SA 11 (N)

Rex v Jopp and Another: Name of the parties concerned

1949: Date of decision (or when the case was heard)

(4): Volume number

SA: SA Law Reports

11: Page or section number

(N): In this case Natal - where the case was heard. Similarly, (C) would indicate Cape, (G) Gauteng, and so on.

NOTE: no . after the v

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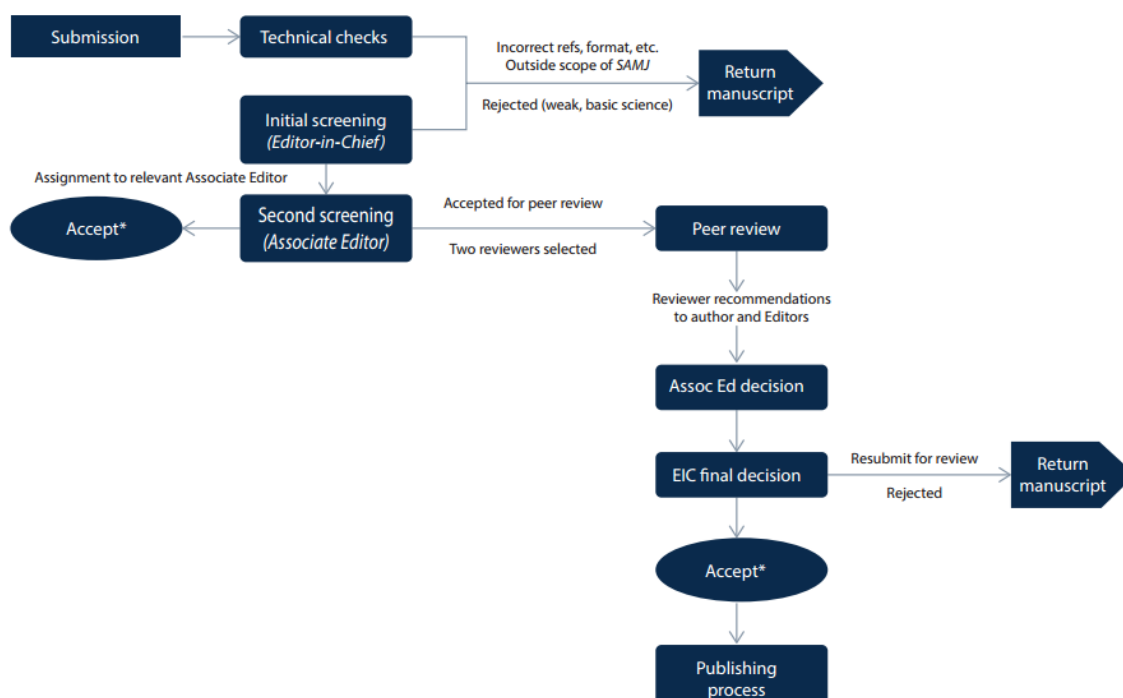
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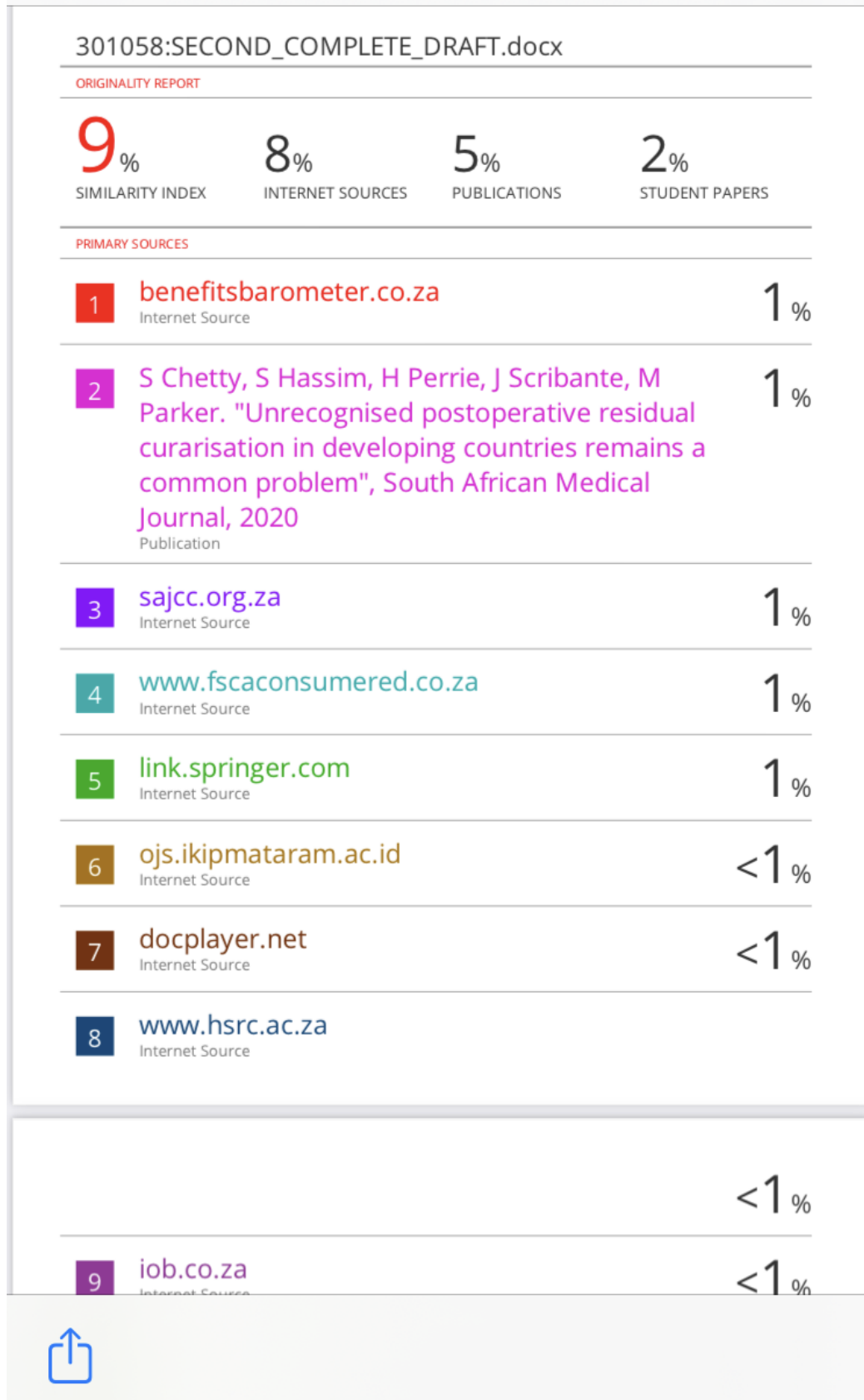
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Appendix 5: Turnitin report cover page



Appendix 6: Scoring system for financial literacy questionnaire

Construction of Domain Scores and Overall Financial Literacy Score

B1. Indicators and Methodology Involved in Constructing Financial Literacy Domain Scores

B1.1. Financial Control Domain

- This domain is constructed using eight indicators: Q1, Q5, Q16-18, Q27, Q29, and Q38.
- **Initial transformations** are conducted on the different indicators to create summary indicators of the five sub-domains, as outlined in Column 3 of the table below.
- **Standardising indicators**: each of the five aspects of financial control outlined in the table above were standardised into 0-100 scores to ensure that they assume equal weighting in the domain score (see Column 4 of the table below).
- **Final domain score (*fincdom*)**: the domain variable is created by averaging together the standardised sub-domain scores

Indicator	Sub-domain	Initial Transformation	Standardisation
Indicator 1 (Q1)	Personal involvement in daily household money management	A dummy variable is created with a value=1 if Q1 > 0 & Q1 ≤ 3 (“has some involvement in household money management”) and a value=0 if Q1 ≥ 4.	All values are multiplied by 100
Indicator 2 (Q5)	Presence of a household budget	A dummy variable is produced, where those with a budget in place assigned a value=1 if Q5=1, with all other response codes in Q5 assuming a value of 0.	All values are multiplied by 100
Indicators 3-5 (Q16-18)	Considered approach to personal finances (careful spending, paying bills timeously, and closely monitoring financial matters)	The 5-point scale for items Q16-Q18 is reversed so that larger values indicate greater behavioural frequency. ‘Do not know’ and ‘Refuse to answer’ responses are assigned midpoint values of 3. A variable corresponding to the average value of the three items is then constructed, with 1=never and 5=always.	A value of 1 is subtracted from all responses. The scores are then divided by 4 and multiplied by 100.
Indicators 6-7 (Q27, 29)	Making ends meet	A 3-point scale is created based on responses to both Q27 and Q29. The variable is based on the following classification: <ul style="list-style-type: none"> ▪ 1= not making ends meeting and relying on credit: Q27=1 & Q29 = 5, 6 or 8-17; ▪ 2=not making ends meet and making do with existing resources: Q27=1 & Q29 = 1-4 or Q29=7; ▪ 3= making ends meet: Q27=2 	A value of 1 is subtracted from all responses. The scores are then divided by 2 and multiplied by 100.
Indicator 8 (Q38)	Preference for spending or saving	The 5-point agreement scale for statement “money there to be spent” is left as is, with the only change being that ‘do not know’ (code 8) and ‘refuse to answer’ (code 9) responses are assigned midpoint values of 3.	A value of 1 is subtracted from all responses. The scores are then divided by 4 and multiplied by 100.

Summary description: Someone with high financial control tends to be involved in daily financial decision-making processes, exhibits a careful approach to personal finances, prefers saving overspending money, and

lives in a household that budgets and is able to make ends meet. The converse applies for individuals with low financial control.

B1.2. Financial Planning Domain

- This domain is constructed using five indicators: Q19, Q32, Q35, Q36, and Q70
- **Initial transformations** are conducted on the different indicators to create summary measures of the five sub-domains, as outlined in Column 3 of the table below.
- **Standardising indicators:** each of the five aspects of financial control outlined in the table above were standardised into 0-100 scores to ensure that they assume equal weighting in the domain score (see Column 4 of the table below).
- **Final domain score (finpdom):** the domain variable is created by averaging together the standardised sub-domain scores

	Sub-domain	Initial Transformation	Standardisation
Indicator 9 (Q19)	Tends to set and strive to achieve long term financial goals	The 5-point scale for item Q19 is reversed so that larger values indicate greater behavioural frequency, so that 1=never and 5=always. 'Do not know' and 'Refuse to answer' responses are assigned midpoint values of 3.	A value of 1 is subtracted from all responses. The scores are then divided by 4 and multiplied by 100, to create a 0-100 score.
Indicator 10 (Q32)	Has emergency funds or rainy-day funds	A dummy variable is produced, where those with emergency funds are assigned a value=1 if Q32=1, with all other response codes in Q32 assuming a value of 0. Initially a dummy variable based on OECD core item Q33 was planned, but ultimately this was substituted for Q32 based on quality of responses.	All values are multiplied by 100, to create a 0-100 score.
Indicators 11 (Q35)	Preference for spending money vs long-term saving	The 5-point agreement scale for statement "I find it more satisfying to spend money than save it for the long term" is left as is, so that 1=completely agree; 5=completely disagree. The only change being that 'do not know' (code 8) and 'refuse to answer' (code 9) responses are assigned midpoint values of 3.	A value of 1 is subtracted from all responses. The scores are then divided by 4 and multiplied by 100, to create a 0-100 score..
Indicator 12 (Q36)	Living for today vs long term provisioning	The 5-point agreement scale for statement "I tend to live for today and let tomorrow take care of itself" is left as is, so that 1=completely agree; 5=completely disagree. The only change being that 'do not know' (code 8) and 'refuse to answer' (code 9) responses are assigned midpoint values of 3	A value of 1 is subtracted from all responses. The scores are then divided by 4 and multiplied by 100, to create a 0-100 score.
Indicator 13 (Q70)	Saved money in last 12 months	A dummy variable is produced, where those managing to save either informally or formally in the last year are assigned a value=1 (at least one option in codes 1-7 circled in Q70). Those not circling any of option codes 1-7 or that indicated that they 'do not know' (code 8) or 'refuse to answer' (code 9) are assigned a value of 0. An explicit decision was taken not to differentially weight informal and formal savings.	All values are multiplied by 100, to create a 0-100 score.

<p>Summary description: Someone with a high financial planning score tends to set financial goals and work hard to meet them, prefers to save for the long term and worries about tomorrow, has emergency funds in place and has managed to save recently (through a formal savings product or informal means).</p>
--

B1.3. Product Choice Domain

- This domain is constructed using twelve indicators: Q42, Q51, Q64, Q71; Q43, Q52, Q65, Q72; Q98-100, and Q102
- **Initial transformations** are conducted on the different indicators to create summary measures of the four sub-domains, as outlined in Column 3 of the table below.
- **Standardising indicators:** each of the four aspects of financial control outlined in the table above were standardised into 0-100 scores to ensure that they assume equal weighting in the domain score (see Column 4 of the table below).
- **Final domain score (proddom):** the domain variable is created by averaging together the standardised sub-domain scores

	Sub-domain	Initial Transformation	Standardisation
Indicators 14-17 (Q42, 51, 64, 71)	Product awareness [range=0-50 products]	A continuous variable is created by adding together number of banking products (Q42), credit and loan products (Q51), investment and savings products (Q64), and insurance products (Q71) that respondents are aware of. This produces a score of 0-50 based on the awareness of each of the 50 products listed.	All values are multiplied by 2 to create a 0-100 score.
Indicators 18-21 (Q43, 52, 65, 72)	Product holding	A dummy variable is produced with '1' assigned to anaesthetists who currently hold at least one banking product (Q43), credit and loan product (Q52), investment and savings product (Q65), <u>and</u> insurance product (Q72). A value of 0 is assigned to those who do not currently have at least one of each of the four product types.	All values are multiplied by 100, to create a 0-100 score.
Indicators 22-23 (Q98-99)	Financial product decision-making	This measure combines two attitudinal measures: having clear idea of product need (Q98) and informed product choice (Q99). In both instances, codes 3-6 recoded to '0', while codes 1-2 are reverse scaled. Based on this, the codes for both Q98 and Q99 are 0=Disagree, 1=Tend to agree, 2=Totally agree. The two items are then added together to create a 0-4 scale.	All values are divided by 4 and multiplied by 100, to create a 0-100 score.
Indicators 24-25 (Q100, 102)	No experience of regret about recent financial product choice	A dummy variable is created where 0 indicates regret and 1 no regrets. Specifically, a value of 1 indicates that the respondent does not regret any key financial decisions made in last year (Q100) <u>and</u> did not pay for an unsuitable product in last five years (Q102) (none of codes 1-6 in Q100 circled and Q102 is not 1). Conversely, a value of 0 is assigned to anaesthetists who mention they regretted financial decisions in the last year <u>or</u> paid for an unsuitable product in last five years (one or more of codes 1-6 in Q100 circled or Q102 is '1').	All values are multiplied by 100, to create a 0-100 score.

Summary description: A higher product choice score is given to someone

(a) with a broad awareness of different types of banking, credit/loan, savings and investment, and insurance products;

(b) holding at least one of each of the four product types mentioned above;

(c) who believes they have a clear understanding of their product needs and who undertakes detailed research before choosing a product; and

(d) who has no regrets about recent financial product decisions (last year) and who has not taken an unsuitable product (last 5 years)

B1.4. Financial Knowledge and Understanding Domain

- This domain is constructed using eight indicators: knowledge quiz items, Q108-115
- **Initial transformations** are conducted on the different indicators to create summary indicators of the five sub-domains, as outlined in Column 3 of the table below.
- **Standardising indicators:** each of the five aspects of financial control outlined in the table above were standardised into 0-100 scores to ensure that they assume equal weighting in the domain score (see Column 4 of the table below).
- **Final domain score (knowdom):** the domain variable is created by averaging together the standardised sub-domain scores

	Sub-domain	Initial Transformation	Standardisation
Indicator 26 (Q108)	Basic mathematical division	Dummy variable =1 if Q108=200	Each of the eight knowledge dummy variables is then summed into a 0-8 scale. This is then converted into a 0-100 scale by dividing all values by 8 and multiplying by 100.
Indicator 27 (Q109)	Effects of inflation	Dummy variable =1 if Q109=3	
Indicator 28 (Q110)	Interest paid on loans	Dummy variable =1 if Q110=0	
Indicator 29 (Q111)	Interest on deposits	Dummy variable =1 if Q111=102	
Indicator30 (Q112)	Compound interest	Dummy variable =1 if Q112=1 “More than R110”)	
Indicator 31 (Q113)	Risk of high return investments	Dummy variable =1 if Q113=1	
Indicator 32 (Q114)	Effects of inflation on cost of living	Dummy variable =1 if Q113=1	
Indicator 33 (Q115)	Risk diversification	Dummy variable =1 if Q115=1	

<p>Summary description: Someone with high financial knowledge and understanding has a familiarity with most or all of the aforementioned basic concepts</p>
--

B2. Indicators Selected for Constructing Domain Scores and Overall Financial Literacy Score

In this section, the set of 33 measures used in constructing the composite domain scores and overall financial literacy score are presented, including the specific phrasing and coding structure. The question numbers refer to those containing in the original FSB Financial Literacy Baseline Survey 2011 questionnaire (as contained in Appendix A). The items are clustered according to the financial literacy domain they inform.

The intention is to field these core items on a regular basis in order to monitor change in financial literacy in the country on aggregate, by specific domains, and among at-risk groups. For this reason, a fairly parsimonious set of indicators have been selected.

FINANCIAL CONTROL

1. Who is responsible for day-to-day money management decisions in your household?

You	1
You and your partner	2
You and another family member (or family members)	3
Your partner	4
Another family member or (or family members)	5
Someone else	6
<i>Nobody</i>	7
(Do not know)	8
(Refused to answer)	9

5. Do you have a household budget?

[IF NECESSARY ADD: a budget is used to decide what share of your income will be used for spending, saving and paying bills]

Yes	1
No	2
(Do not know)	8

Ask Q.6
 → Skip to Q.7
 → Skip to Q.7

I am going to read out some behaviour statements. Please can you tell me how often you do these things or not.
 [FSB Showcard 1]

	Always	Often	Some of the time	Seldom	Never	(Do not know)	(Refused)
16. Before I buy something, I carefully consider whether I can afford it	1	2	3	4	5	8	9
17. I pay my bills on time	1	2	3	4	5	8	9
18. I keep a close personal watch on my financial affairs	1	2	3	4	5	8	9

27. Sometimes people find that their income does not quite cover their living costs. In the last 12 months, has this happened to you?

Yes	1
No	2
(Do not know)	8
(Refused to answer)	9

→ Skip to Q 30

29. **Of the things you mentioned, which does your household rely on the most [to make ends]? [FSB Showcard 2]**

INTERVIEWER: CIRCLE ONE OPTION ONLY.

	Q.29 [One option]
a. Draw money out of savings or transfer savings into current account	1
b. Cut back on spending, spend less, do without	2
c. Sell something that I own	3
d. Work overtime, earn extra money	4
e. Borrow food or money from family or friends	5
f. Borrow from employer/salary advance	6
g. Pawn something that I own	7
h. Take a loan from my savings and loans clubs	8
i. Take money out of a flexible home loan account	9
j. Apply for loan/withdrawal on pension fund	10
k. Use authorised, arranged overdraft or line of credit	11
l. Use credit card for a cash advance or to pay bills/buy food	12
m. Take out a personal loan from a formal financial service provider (including bank, credit union or microfinance)	13
n. Take out a payday loan (advance on salary from someone-not employer)	14
o. Take out a loan from an informal provider/moneylender	15
p. Use unauthorised overdraft	16
q. Pay my bills late; miss payments	17
r. Other (SPECIFY)	18
s. (Do not know)	98
t. (Refused to answer)	99

I would like to know how much you agree or disagree with each of the following statements: [FSB Showcard 4]

	Completely agree	Agree	Neither Nor	Dis-agree	Completely disagree	(Do not know)	(Refused)
38. Money is there to be spent	1	2	3	4	5	8	9

FINANCIAL PLANNING

I am going to read out some behaviour statements. Please can you tell me how often you do these things or not.

[FSB Showcard 1]

	Always	Often	Some of the time	Seldom	Never	(Do not know)	(Refused)
19. I set long-term financial goals and work hard to achieve them	1	2	3	4	5	8	9

32. **Have you set aside emergency or rainy day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?**

Yes	1
No	2
(Don't know)	8
(Refused)	9

I would like to know how much you agree or disagree with each of the following statements: [FSB Showcard 4]

	Completely agree	Agree	Neither Nor	Dis-agree	Completely disagree	(Do not know)	(Refused)
35. I find it more satisfying to spend money than to save it for the long term	1	2	3	4	5	8	9
36. I tend to live for today and let tomorrow take care of itself	1	2	3	4	5	8	9

70. In the past 12 months have you been saving money in any of the following ways? Please do not include pension savings in this question.

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. CIRCLE ALL THAT APPLY.

a.	Building up a balance of money in your bank account	1
b.	Paying money into a savings account	2
c.	Saving cash at home or in your wallet	3
d.	Giving money to family to save on your behalf	4
e.	Saving in a stokvel or any other informal savings club	5
f.	Buying financial investment products, other than pension funds [e.g. investment trusts, stocks and shares]	6
g.	Or saving in some other way (including remittances, buying livestock or property)	7
h.	(Do not know)	8
i.	(Refused to answer)	9

PRODUCT CHOICE

I am going to start with products that people can get from banks. [FSB Showcard 6]

42. Please can you tell me whether you have heard of any of the following banking products?

43. [ASK FOR ALL PRODUCTS CIRCLED IN Q.42] And now can you tell me whether you currently hold any of these types of products?

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. CIRCLE ALL THAT APPLY.

	42. Heard of <u>banking products</u>.	43. <u>ASK FOR ALL products circled in Q.0</u> Currently hold types of banking products
a.	Mzansi account	01
b.	Savings account	02
c.	Current or Cheque account	03
d.	Fixed deposit bank account	04
e.	ATM card	05
f.	Debit card or Cheque card	06
g.	Credit Card	07
h.	Garage card or petrol card	08
i.	Home loan from a big bank	09
j.	Savings book at a bank	10
k.	Post Office / Post Bank savings account	11
l.	Other bank product (SPECIFY)	12
m.	(None of the above)	97
n.	(Refused)	98
o.	(Don't know)	99

I would now like to talk about savings and investments. [FSB Showcard 9]

64. Please can you tell me whether you have heard of any of the following types of investment or savings products.

65. [ASK FOR ALL PRODUCTS CIRCLED IN Q.0] And now can you tell me whether you currently hold any of these types of investment or savings products?

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. CIRCLE ALL THAT APPLY.

	64. Heard of any of <u>investment or savings product</u>.	65. <u>ASK FOR ALL products circled in Q.64</u> Currently has <u>investment or savings product</u>
	<i>Formal products</i>	
a.	01	01
b.	02	02
c.	03	03
d.	04	04
	<i>Retirement products</i>	
e.	05	05
f.	06	06
g.	07	07
	<i>Savings clubs</i>	
h.	08	08
i.	09	09
j.	10	10
k.	11	11
l.	97	97
m.	98	98
n.	99	99

I would now like to talk about your knowledge and personal experience with different ways of borrowing money.
[FSB Showcard 8]

51. Please can you tell me whether you have heard of any of the following types of credit or loans.

52. [ASK FOR ALL PRODUCTS CIRCLED IN Q.0] And now can you tell me whether you currently hold any of these types of credit or loans?

INTERVIEWER: MULTIPLE RESPONSES ALLOWED		
	51. Heard of type of <u>credit or loan</u>	52. <u>ASK FOR ALL products</u> circled in Q.0 Currently hold type of <u>credit or loan</u>
<i>Formal credit and loans</i>		
a. Loan from a microlender e.g. African Bank, Credit Indemnity, Capitec Bank, Ubank (Teba)	01	01
b. Vehicle or car finance through bank or dealer	02	02
c. Overdraft facility	03	03
d. Store card where you buy on account and pay later e.g. Edgars	04	04
e. Lay-bye	05	05
f. Hire Purchase (HP) / paying in monthly instalments for goods such as furniture	06	06
<i>Informal credit and loans</i>		
g. Loan from friends or family	07	07
h. Loan from an informal money lender (mashonisa / loan shark)	08	09
i. Loan from a stokvel / umgalelo or savings club	09	10
j. Loan from local spaza	10	11
k. Store account with no card where you pay later (e.g. spaza, corner cafe, garage, general dealer)	11	12
l. Loan from an employer	12	08
m. (None of the above)	97	97
n. (Don't know)	98	98
o. (Refused)	99	99

I would now like to talk about various types of insurance. [FSB Showcard 10]

71. Please can you tell me whether you have heard of any of the following types of insurance products.

72. [ASK FOR ALL PRODUCTS CIRCLED IN Q.0] And now can you tell me whether you currently hold any of these types of insurance products?

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. CIRCLE ALL THAT APPLY.

	71. Heard of <u>insurance product</u>	72. <u>ASK FOR ALL products</u> <u>circled in Q.71</u> Currently has <u>insurance</u> <u>product</u>
Short-term (asset) insurance		
a.	Vehicle or car insurance	01
b.	Household contents insurance (e.g. furniture and appliances)	02
c.	Homeowners' insurance on building / house structure	03
d.	Cell phone insurance	04
Long-term insurance		
e.	Life insurance or life cover	05
f.	Insurance that pays your loan or borrowing when you die	06
g.	Disability insurance or cover	07
h.	Medical aid scheme	08
i.	Hospital cash plan	09
Funeral		
j.	Belong to a burial society	10
k.	Funeral policy with a bank (including Post Bank)	11
l.	Funeral cover through an undertaker or funeral parlour / home	12
m.	Funeral policy with an insurance company	13
n.	Funeral cover from an spaza shop or stokvel	14
o.	Funeral cover from any other source (e.g. shop, employer)	15
p.	(None of the above)	97
q.	(Don't know)	98
r.	(Refused)	99

How much do you agree or disagree with the following statements?

[FSB Showcard 12]

	Totally agree	Tend to agree	Tend to disagree	Totally disagree	(Don't know)	(Not applicable)	(Refused)	
98.	I've got a clear idea of the sorts of financial products or services that I need without consulting a financial adviser	1	2	3	4	5	6	7
99.	I always research my choices thoroughly before making any decisions about financial products or services	1	2	3	4	5	6	7

100. In the last 12 months, have you made a decision about any of the following that you later regretted?

INTERVIEWER: MULTIPLE RESPONSES ALLOWED. CIRCLE ALL THAT APPLY.

a.	Savings or investments	1
b.	Taking out a home loan	2
c.	Taking out a loan or credit agreement	3
d.	Insurance of any type	4
e.	Tax	5
f.	Managing credit/debt	6
g.	(None of the above)	7
h.	(Don't know)	8
i.	(Refused)	9

102. Within the last five years, have you discovered that you had been paying for a financial product that was clearly unsuitable for your needs? [This would include formal and informal products, covering savings, investments, credit or loans, as well as insurance]

Yes	1	Ask Q.103
No	2	→ Skip to Q.108
(Do not know)	8	→ Skip to Q.108
(Refused to answer)	9	→ Skip to Q.108

FINANCIAL KNOWLEDGE AND UNDERSTANDING

The next few questions are more like a quiz. The questions are not designed to trick you so if you think you have the right answer, you probably do. If you don't know the answer, just say so

108. Imagine that five friends are given a gift of R1,000. If the friends have to share the money equally how much does each one get? (Read question again if asked)

Record response numerically - - -

R			
---	--	--	--

(Don't know)	998
(Refused)	999
(Irrelevant answer)	997

109. Now imagine that the brothers have to wait for one year to get their share of the R1,000. In one year's time will they be able to buy: (Read out)

More with their share of the money than they could today	1
The same amount	2
Or, less than they could buy today	3
<i>(It depends on inflation)</i>	4
<i>(It depends on the types of things that they want to buy)</i>	5
(Don' know)	8
(Refused)	9
<i>(Irrelevant answer)</i>	7

110. You lend R25 to a friend one evening and he gives you R25 back the next day. How much interest has he paid on this loan? (Read out question again if asked)

Record response numerically - - -

R			
---	--	--	--

(Don't know)	998
(Refused)	999
(Irrelevant answer)	997

111. Suppose you put R100 into a savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made? (Read out question again if asked)

Record response numerically - - -

R			
---	--	--	--

(Don't know)	998
(Refused)	999
(Irrelevant answer)	997

112. And how much would be in the account at the end of five years? Would it be: (Read out)

More than R110	1
Exactly R110	2
Less than R110	3
Or is it impossible to tell from the information given	4
(Don't know)	8
(Refused)	9
(Irrelevant answer)	7

I would like to know whether you think the following statements are true or false:

	True	False	(Do not know)	(Refused)
113. If someone offers you the chance to make a lot of money it is likely that there is also a chance that you will lose a lot of money.	1	2	8	9
114. High inflation means that the cost of living is increasing rapidly	1	2	8	9
115. It is less likely that you will lose all of your money if you save it in more than one place.	1	2	8	9