


PROGRAMME DESCRIPTION

Burnout levels among undergraduate pharmacy students

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Keywords

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Abstract

Background: Burnout is a multi-dimensional syndrome characterised by emotional exhaustion, depersonalisation, and a diminished sense of personal accomplishment. Burnout among students has been associated with increased absenteeism, lower academic performance, and higher dropout rates. This study aims to determine the levels and factors associated with burnout among Tanzanian pharmacy students. **Methods:** The study utilised a multi-method study design. A descriptive cross-sectional study was conducted using a structured questionnaire based on the Maslach Burnout Inventory-Student Survey (MBI-SS) instrument to determine levels of burnout and Focus Group Discussions (FDGs) to explore factors associated with burnout. **Results:** A total of 428 undergraduate Pharmacy students were enrolled in the study. The mean age of participants was 23.21 ± 0.14 . The overall burnout prevalence was 36.5%, of which emotional exhaustion was the most prevalent domain of burnout at 79.44%. Male gender was a significant predictor of emotional exhaustion [OR = 4.34; 95% CI 1.43-6.64; P -value 0.002]. Being in a second year, third and fourth year was also a significant predictor of emotional exhaustion (p -value = 0.014, 0.008 and 0.014 respectively). **Conclusion:** There is a high risk of burnout among Tanzanian pharmacy university students. Factors such as non-conducive learning environments, overpacked curricula, and lack of support services were associated with burnout.

Introduction

Burnout is an occupational phenomenon recognised by the World Health Organization. Burnout is currently included in the 11th International Classification of Diseases. It is defined as a syndrome resulting from chronic workplace stress that has not been successfully managed and is characterised by “Feelings of energy depletion or exhaustion”, “Increased mental distance from one’s job, or feelings of negativism or cynicism related to one’s job” and “Reduced professional efficacy”. It is common to find burnout in professions that focus on caring for others, such as social workers, pharmacists, nurses, and doctors, including the students of these professions (Lemaire *et al.*, 2017; Fuller *et al.*, 2020; Dee *et al.*, 2023; Lwiza *et al.*, 2023). The Pharmacy degree study programme can be overwhelming for some students, and scientific studies of pharmacy education indicate that pharmacy

students experience burnout at different stages of their training (Fernandes *et al.*, 2020; Phillips *et al.*, 2020). Burnout among pharmacy students has been associated with poor academic performance and several mental health issues, including depression (Kaur *et al.*, 2020; Gonzalez & Brunetti, 2021; Nguyen *et al.*, 2023). Educational factors such as heavy curricula, working with deadlines, long working hours, staying long distances from campus, lack of exercise, and lockdown have all been associated with burnout among students in developed countries (Babal *et al.*, 2020). Nevertheless, there is limited scientific literature about burnout among pharmacy students in African countries. This study aimed to expand upon the literature as to the well-being of Tanzanian pharmacy students by surveying pharmacy programmes at two large pharmacy schools out of the five pharmacy schools in Tanzania.

Methods

Study design and setting

A mixed-method study design was used to get both quantitative and qualitative data. The first part consisted of a descriptive cross-sectional study that consisted of a survey using the Maslach Burnout Inventory-Student Survey (MBI-SS). The second part was a qualitative assessment of factors perceived to cause burnout among students through the use of focus group discussions. Both activities were conducted between February and April 2023 in the Dar es Salaam region, Tanzania.

Study population

The study involved all 1st, 2nd, 3rd, and 4th-year undergraduate pharmacy students studying at Muhimbili University of Allied Sciences (MUHAS) (non-profit) and Kampala University (KIU) (profit), who willingly consented to participate. The two institutions were purposively selected to represent the five Pharmacy degree training institutions in the country. MUHAS is the oldest and largest public training institution in Tanzania, and KIU represents the largest private training institution. Both institutions annually train, on average, 500-600 Bachelor of Pharmacy students using a 4-year curriculum.

Sampling technique and sampling size

Stratified random sampling was used to obtain participants for the quantitative survey. The sample size was calculated using the formula for cross-sectional study ($z^2p(1-p)/d^2$). Utilising a proportion (p) of 50% of the students with burnout obtained from a study by Kilic and colleagues (2021), the minimum sample size was established to 424 respondents. For the qualitative part, participants were recruited purposively using maximum variation sampling. A maximum variation sampling approach was used to ensure diversity by purposefully selecting students with different educational backgrounds before applying for the degree. This method, typically used in quantitative research, was applied qualitatively to ensure inclusion of Pharmacy students entering directly from A-levels and those with a diploma in pharmacy to allow a broader range of perspectives and experiences.

Quantitative data collection

Burnout was assessed using the Maslach Burnout Inventory-Student Survey (MBI-SS). MBI-SS calculates burnout score using 22 items for three categories of burnout symptoms Emotional Exhaustion (EE), Depersonalisation (DP), and Personal Accomplishment (PA) subscale scores. EE was measured using nine items, DP using five items, and PA using eight items. All survey

items were scored on a scale from 1 to 7; (1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree). The questionnaire also collected social demographic information (age, gender, marital status, residency, part-time job, type of university, year of study, children, and support from family members). The questionnaires were distributed using a Google link, and no emails were to be provided to support anonymity after getting consent from participants. High levels of burnout were represented by having high scores for EE, DP, and PA. The MBI-SS survey questions were transferred onto a Google form that was given to students to fill

Qualitative data collection

Qualitative data was collected using a semi-structured focus group interview guide in February 2023. Focus Group Discussions (FDGs) with 6-8 members were conducted with male and female students after obtaining written consent. Interviews were conducted by trained research assistants to avoid bias as the researchers were a student and faculty of MUHAS. The interviews had three questions that focused on exploring factors that contribute to burnout among pharmacy students. In each FDG session, participants were given participant numbers to maintain confidentiality.

Data analysis

Quantitative data

The data from Google Forms was exported into an Excel format. The raw data was then encrypted in the Excel sheet for use with Statistical Package for Social Sciences version 22 (SPSS Inc., Chicago, IL, United States). Categorical baseline variables were presented as frequencies and percentages, while continuous variables were assigned as means and Standard Deviations (SDs). The chi-square test was used to detect the difference between the level of burnout and other demographic variables, and a multiple logistic regression test was conducted for each of the three MBI component levels to examine the predictors of burnout. Odds ratios and corresponding 95% Confidence Intervals (CI) were reported. A p -value of less than 0.05 indicated a statistically significant outcome.

Qualitative data

The audio records of FDGs were transcribed verbatim. The transcribed data were analysed inductively using thematic analysis. This involved familiarisation with data, developing initial codes, merging codes into themes, reviewing themes, defining and naming themes, and reporting themes. Qualitative data management was

assisted using the software MAXQDA®. The trustworthiness of the results was secured through several ways, such as pretesting, members' checks, and peer debriefing.

Results

Social demographics

A total of 428 undergraduate students from Muhimbili University of Health and Allied Sciences (232) and Kampala International University (196) responded to the survey. The majority of respondents were male, 260 (60.75%), aged between 18-24 years, 324 (75.7%), and were single, 403 (94.2), as presented in Table I.

Table I: Sociodemographic characteristics of pharmacy undergraduate students (n=428)

Variables	Value
Respondents age ranges in years	
18-24	324 (75.7)
25-31	93 (21.7)
32-38	11 (2.57)
Mean age (mean ± SD)	23.2 ± 0.14
Sex (%)	
Male	260 (60.7)
Female	158 (39.3)
Marital status (%)	
Single	403 (94.2)
Married	25 (5.8)
Respondents with children	
Yes	41 (9.6)
No	387 (90.4)
Have a part time job	
Yes	82 (19.2)
No	346 (80.8)
Type of university	
Public (MUHAS)	232 (54.2)
Private (KIUT)	196 (45.8)
Year of study	
1	112 (26.2)
2	122 (28.5)
3	86 (20.5)
4	108 (25.2)
Residency	
On-Campus	134 (31.3)
Off-campus	294 (68.7)
Supporting other family member	
Yes	100 (23.4)
No	328 (76.6)

Prevalence of burnout - student Maslach Burnout Inventory (MBI) scores

The majority of students reported experiencing high levels of emotional exhaustion (EE) 79.4% (340) mean burnout score of 40.8± 12.96 SD, 68.7 % (294), high levels of Depersonalisation (DP) mean burnout score of 17.3± 7.83 SD and 20.8% (89) high levels of Low Personal Accomplishment (LPA) mean burnout score of 29± 12.62 SD respectively as shown in Figures 1-3.

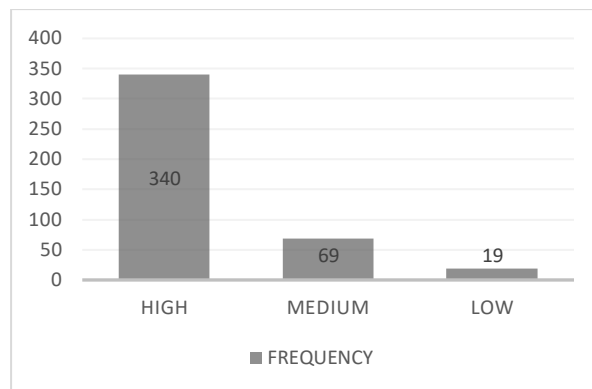


Figure 1: Emotional exhaustion levels

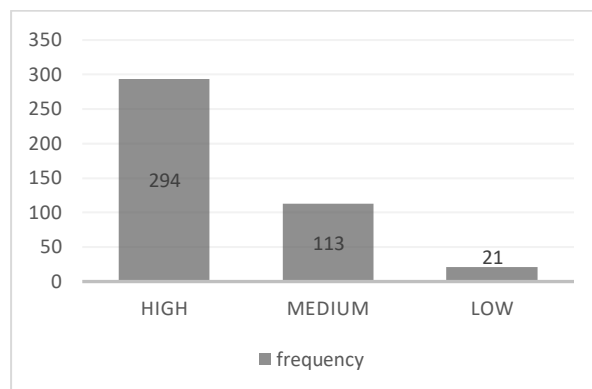


Figure 2: Depersonalisation levels

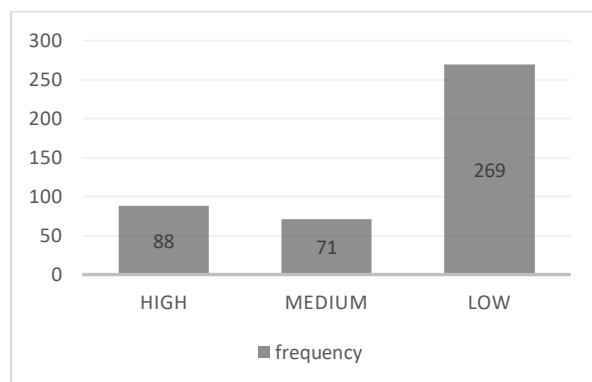


Figure 3: Low personal accomplishment

Association between the different subscales of burnout and sociodemographic characteristics

No significant association was found between Burnout syndrome and student demographics, except for age,

where there was an association between depersonalisation levels and with students of the age group (18-24) ($p = 0.048$), as shown in Table II.

Table II: Association between the different subscales of burnout and sociodemographic characteristics

	Emotional exhaustion				Depersonalisation				Low personal accomplishment			
	Low	Medium	High	P value	Low	Medium	High	P value	Low	Medium	High	P value
Age												
18-24	13	54	257	0.85	11	86	227	0.048	205	54	65	0.943
25-31	5	14	74		8	23	62		56	17	20	
32-38	1	1	9		2	4	5		8		3	
Gender												
Male	14	45	201	0.318	14	73	173	0.482	164	46	50	0.588
Female	5	24	139		7	40	121		105	25	38	
Marital status												
Single	2	4	19	0.671	2	9	14	0.356	15	2	8	0.234
Married	17	65	321		19	104	280		254	69	80	
Type of university												
Public (MUHAS)	11	39	182	0.854	9	59	164	0.457	146	37	49	0.903
Private (KIUT)	11	30	158		12	54	130		123	34	39	
Year												
1	7	28	77	0.089	6	35	71	0.838	79	14	19	0.474
2	5	16	101		6	32	84		72	23	27	
3	3	10	73		3	21	62		49	15	22	
4	4	15	89		6	25	77		69	19	20	
Residence												
Campus	7	27	100	0.246	6	33	95	0.801	88	16	30	0.212
Off-campus	12	42	240		15	80	199		181	55	58	
Children												
Yes	2	2	37	0.12	3	7	31	0.309	11	24	6	0.575
No	17	67	303		18	106	263		77	245	65	
Supporting family												
Yes	15	55	258	0.768	17	82	229	0.467	208	57	63	0.397
No	4	14	82		4	31	65		61	14	25	
Part-time job												
Yes	6	11	65	0.308	7	19	56	0.209	47	11	24	0.088
No	13	58	275		14	94	238		222	60	64	

Predictors of burnout syndrome among pharmacy students

Multiple logistic regression to identify predictors of burnout indicated that the male gender was a significant predictor of emotional exhaustion

[OR = 4.34; 95% CI 1.43-6.64]. Multivariate analysis of demographic characteristics and emotional exhaustion indicated that being in the second, third, and fourth year was a significant predictor of emotional exhaustion (p -value = 0.014, 0.008, and 0.014, respectively), as shown in Table III.

Table III: Predictors of burnout syndrome in undergraduate pharmacy students

	Emotional exhaustion			Depersonalisation			Low personal accomplishment		
	OR	P value	95%CI	OR	P value	95%CI	OR	P value	95%CI
Age (18-24)	2.10	0.491	0.57-0.27	0.563	0.540	0.18-0.32	0.98	0.579	0.39-0.63
Gender									
Male	0.215	0.002	1.43-6.64	0.06	0.082	0.18-3.00	0.44	0.451	1.597-3.58
Female (reference)									
Marital status									
Single	13.03	0.093	11.04-0.84	3.10	0.315	5.49-1.77	0.36	0.355	3.23-8.97
Married (reference)									
University type									
Public (MUHAS)	3.07	0.318	4.00-1.31	5.23	0.184	2.72-0.52	1.77	0.582	3.34-1.88
Private (KIUT) (reference)									
Year os study									
1 (reference)									
2	10.03	0.017	7.48-0.86	7.163	0.195	3.34-0.68	3.39	0.286	5.01-1.48
3	7.06	0.009	8.53-1.28	11.44	0.126	3.93-0.48	6.56	0.149	6.17-0.94
4	9.50	0.016	7.69-0.87	2.817	0.381	3.00-1.15	1.61	0.341	4.13-2.56
Place of residence									
Campus	0.332	0.325	1.41-4.23	3.227	0.301	2.63-0.81	1.176	0.873	3.01-2.56
Off-campus (reference)									
Children									
Yes	3.92	0.244	7.77-1.98	5.03	0.190	4.97-0.98	5.61	0.171	8.696-1.55
No (reference)									
Supports family									
Yes	1.86	0.554	3.99-2.14	1.066	0.950	1.93-1.81	0.56	0.574	2.17-3.904
No (reference)									
Part-time job									
Yes	1.48	0.705	3..88-2.63	0.94	0.947	1.92-2.05	2.16	0.470	4.43-2.05
No (reference)									

Factors associated with burnout among pharmacy students

A total of 12 Students were interviewed (two groups consisting of 3 males and females in each group) from both non-profit and for-profit universities. Four main themes emerged from the thematic analysis, specifically (i) poor learning environmental factors, (ii) heavy academic workload, (iii) Negative perspective towards the pharmacy profession, and (iv) lack of mentoring and support.

Theme 1: Non-conductive learning environments

Students expressed dissatisfaction with learning conditions. Classroom sizes, class facilities and the availability of electricity were the most complained

about issues, as reported by some of the participants below;

“There are instances where there is no electricity (rationing). So, when the electricity goes out and with the nature of our classrooms, yes, they're big but you find that if there's no fan and we are so many in class, we're almost 100 in one classroom, so that together with the heat during the day and the scorching sun, one can just fall asleep, which can be a big challenge when it comes to studying.” (Female Bpharm student 2nd year Private university)

“There is a problem with electricity, so staying in class and the heat, it becomes very hard, especially during the day. Nobody likes to enter class during the day. It's very sunny and you find that there is no

fan or sometimes the projector doesn't work, so you have to listen to the teacher talk. It's very boring." (Male Bpharm student 1st year Private university)

Theme 2: Heavy academic workload

Students expressed that the pharmacy programme requirements. Students felt overwhelmed with coursework, examinations, and overlaps in the curriculum, as reported by some of the participants below;

"The sheer volume of coursework, exams, and clinical rotations can be overwhelming and leave little time for self-care" (Female Bpharm student 4th-year public university)

"Our curriculum is a bit challenging according to me, because even now if I show you the curriculum we studied microbiology in the first year second semester, in the second year first semester we repeated two courses that included microbiology and molecular biology in the same place. We will also study microbiology in the second semester, this duplication is highly unnecessary because the studying load becomes overwhelming " (Male Bpharm student 1st year Private university)

".....It was very hard it was just you know deadline after deadline after deadline, this assignment, that assignment, this report. At the end of the day, there were reports on immunology which was 20 marks, reports on microbiology 20 marks, there were still reports on pharmaceuticals going on so you can imagine that amount of stress" (Female Bpharm student 2nd year Private university)

Theme 3: Lack of mentoring support

Students felt there was insufficient guidance, mentorship, as well as resources for mental health support, as reported by some of the participants below;

"there have been instances where I felt lost and uncertain about what path I wanted to pursue, however lack of mentorship programs and readily available advisors, it made it difficult to seek guidance" (Female Bpharm student 4th year Public university)

"..there is a challenge of employment you see, as in jobs for pharmacists usually, doctors get more than 1000 jobs and pharmacists get five jobs. And I am in my second year here, this gives me a challenge and breaks my strength to even continue studying when I think about this issue of employment." (Female Bpharm student 2nd year Private university)

Theme 4: Negative perception of pharmacists

There is a stigma in the general society about what pharmacists are. Most are labelled as shopkeepers, meaning just people who sell medicines in the pharmacy or the hospital drug counter, as reported by some of the participants below;

"Another issue that bothers me is being called shopkeepers, you know when you study pharmacy your job is to sell drugs, it's like people don't know that we have other areas of application." (Female Bpharm student 2nd year public university)

"...I get stressed, I study hard, and then someone comes and says you are a shopkeeper, when you have paid your fees, gone through that, that also puts stress on me because I don't even get in the mood to study" (Male Bpharm student 4th year private university)

Discussion

Burnout among students is a serious health issue that has been associated with decreased student engagement, performance, absenteeism, and motivation, which can lead to increased dropout rates and even prolonged graduation timelines (Jagodics *et al.*, 2023).

This study found that around one-third of undergraduate pharmacy students in Tanzania are experiencing burnout. These findings are similar to findings from a survey conducted in the United States of America (USA) that found that 39% of Pharm.D. students were experiencing burnout (Silva *et al.*, 2019). Nonetheless, the level of burnout among these pharmacy students was lower than in other studies in the USA (Jacoby *et al.*, 2022). This study also found that pharmacy students were experiencing high levels of emotional exhaustion, depersonalisation, and diminished levels of personal accomplishment. These findings are similar to findings conducted among pharmacy students in the USA and United Kingdom (UK) and burnout studies done on other health profession students in developed countries (Cecil *et al.*, 2014; Nagy *et al.*, 2024). In this study, there was a significant association between depersonalisation levels and age. Depersonalisation can be explained as a fleeting feeling of being detached from yourself or your environment. This can be explained by several reasons, such as Adjustment to University Life: Younger students may face challenges adjusting to university life, while older students may have already adapted to the academic setting. Difficulties in adjusting to new surroundings and social environments can contribute to feelings of detachment and depersonalisation. But also

due to age, this age group might not have much experience coping with university and adapting to the academic environment. These findings are, however, in contrast to a study done in Malaysia that found depersonalisation had a weak effect on the student's academic performance (Yunus *et al.*, 2018). This study's findings are different to what has been observed in the United States of America. This could be because pharmacy students in the USA are much older, as the pharmacy programme is a postgraduate degree (Rux *et al.*, 2022).

In this study, male participants were found to be at a greater risk of burnout than females. These findings differ from what has been described in a systematic review of burnout among medical students that found no gender difference (Frajerman *et al.*, 2019). The difference observed in this study may be attributed to factors such as the African societal expectations of men and traditional gender roles that often pressure men to perform exceptionally well academically, socially, and in extracurricular activities, which may contribute to burnout. Men in Africa are socialised to suppress their emotions. This may result in male students feeling hesitant to seek help or express their feelings of stress or burnout, which can exacerbate their symptoms. Particularly considering that African men generally have low levels of health-seeking behaviours (Asfaw *et al.*, 2018). These observations differ from developed countries where studies have found that burnout levels were higher in females in healthcare professions and students. This may be because women in these societies may feel the need to succeed in both their home life and work environment (McQuade *et al.*, 2020). In this study, high emotional exhaustion was positively associated with the year of study. Being in the third year of study significantly predicted emotional exhaustion. These findings are similar to those by Kilic and colleagues (2021) among health profession students in developing countries, who found that burnout was highest in students close to graduation.

The qualitative findings found several factors were associated with burnout. Among these were not conducive learning environments, including an erratic supply of electricity. These findings are similar to a study conducted in the Philippines, which found that electric power interruptions contribute to poor learning environments and burnout (Rotas & Cahapay, 2020). Lack of reliable infrastructure for electricity is a unique educational challenge of tertiary education in developing countries, rarely observed in developed countries (Funmilola *et al.*, 2024).

The heavy academic workload was also a factor that caused that students perceived as the cause of burnout. Curriculum overload is a well-established factor for

burnout for pharmacy and medicine students (Kelley *et al.*, 2023). These findings suggest a need for curriculum reform of the undergraduate pharmacy programmes to reduce overload and redundancy.

Pharmacy students in this study expressed the feeling of being unsupported and mentored by their academic institutions. Lack of mentoring may have precipitated burnout among pharmacy students. Findings on burnout in women physicians found that lack of mentorship and role models was related to burnout (Blanchard & Blanchard, 2020). These findings suggest comprehensive mentoring and counselling services at pharmacy schools may reduce burnout.

The negative perception of the pharmacy profession as mere shopkeepers was also perceived as a factor in burnout. Students experienced social shame, being described as insignificant shopkeepers selling drugs. The lack of professional identity of pharmacy students may have made them less motivated to learn and contributed to burnout. These findings are similar to studies of the pharmacy profession in low and middle-income countries that found that pharmacists often lack professional identity (Elvey *et al.*, 2013). To improve student undergraduate pharmacy professional identity, their identity has to be nurtured through the curriculum and the relevant regulatory authorities. Studies have shown that faculty and the curriculum play a vital role in fostering the professional identity of pharmacy students positively (Johnson *et al.*, 2023).

Limitations

The cross-sectional design of this study of only two schools of pharmacy limits the generalisability of these findings. Social desirability bias: Participants may provide responses that they believe are socially acceptable or expected rather than their true feelings or experiences. Mitigation involved building rapport and establishing trust with participants to create a comfortable environment where they feel encouraged to share their honest perspectives while assuring confidentiality and emphasising the importance of truthful responses.

Recommendation

Burnout counselling support services should be enhanced at the university, and Pharmacy students should be trained to identify the risk of burnout from the first year to receive the required support.

Conclusion

The risk of burnout among pharmacy students in Tanzania is high, especially from the second year onwards. Factors such as non-conducive learning environments and overpacked curricula need to be addressed to reduce the risk of burnout among pharmacy students.

Conflict of interest

The authors declare no conflict of interest.

Source of funding

The authors did not receive any funding.

Ethical considerations

The Muhimbili University of Health and Allied Sciences (MUHAS) Research and Publication Committee approved this study. (Ref. No. DA.282/298/01.L/175). Names of students were not collected for confidentiality purposes; thus, most information was coded and entered into the computer for statistical analysis.

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Appendix A: FGD questions used for the interview guide

1. What factors do you perceive make you feel stressed or tired while undertaking the Bachelor of Pharmacy Degree Programme?
Probe:
 - a. Curriculum issues (no of courses, sequence of courses, Faculty skills in teaching)
 - b. Finances (school fees leaving allowance
 - c. Family issues (need to take
 - d. University teaching Infrastructure (Classroom, Lab,)
2. What do you regret not knowing after joining the pharmacy course, and if you knew them would you have continued with the course or would you have changed it?
Probe:
 - a. Salary after graduation
 - b. Job opportunities
 - c. Perception of pharmacists
 - d. Further education opportunities
3. What factors motivate you to keep on working hard despite the challenges you have described
Probe
 - a. Passion for the profession
 - b. Continuation from past educational journey
 - c. Possibility of financial gains