

Undergraduate Medical Student Attrition at Maseno University School of Medicine

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Abstract

Background

Worldwide, admission into medical schools is highly competitive, and the training is very demanding. Despite having lower attrition rates than other university programmes, medical school attrition varies from as low as 3.8% to as high as 80%. Student attrition has several causes and also affects the students and other parties.

Objectives

The objectives of this study were to determine the attrition rates for six cohorts of students who graduated from the medical school (2018-2023) and to study the perceptions of ongoing students on the causes and effects of attrition in the medical school.

Methodology

The study employed a cross-sectional mixed-methods design conducted from January to March 2024. Quantitative data included student admission dates, repeats, discontinuations, progression challenges, and graduation dates and were analysed using the R programme. The results were presented as incidence and attrition rates, displayed graphically using Kaplan-Meier curves, with statistical differences assessed via the Log-Rank test. Qualitative data was collected through focused group discussions with fourth to sixth-year students. These sessions were recorded, transcribed, and analysed using Microsoft Excel.

Results

The mean study duration in the Bachelor of Medicine and Surgery (MBChB) programme was 70.8 months (min 3, max 112), with an attrition of 25%. Attrition increase was statistically significant between subsequent graduating cohorts (Chi sq= 24.8, 5 degrees of freedom, $p= 0.0004$), and direct entry students had statistically higher attrition than self-sponsored students (Chi sq= 66.1 on 1 degree of freedom, $p= 0.0016$).

The students perceived academic difficulty, economic reasons and lack of social support as the top three causes of attrition. All indicated that the most significant effect of attrition was on the mental health of the affected student.

Conclusion

Student attrition at MSU is similar to other African medical schools, with a significant increase observed in our successive cohorts. Economic factors, programme difficulty, and lack of social support were cited as leading causes, aligning with global studies. Unique challenges at Maseno University School of Medicine include student accommodation during clinical years.

BACKGROUND

Globally, matriculation into medical school is competitive (Tamimi T., 2023) and requires substantial effort. Kenyan entry requirements demand high academic performance, with an actual admission threshold often set at an A-minus due to intense competition. In Kenya, only 1,500 slots are available across 14 medical schools compared to 10,500 in the United Kingdom against 26,800 applicants (Medical Blue Peanut, 2023),

Traditionally, medical schools have lower attrition rates than other university courses (Maher B, 2013), but they vary globally, from 3.6–26% (Anand A., 2018). In Africa, attrition rates range from 7.8–80% (Egwu O., 2010), (Woodward A., 2018) (J. Berhan, 2008), with factors contributing to attrition varying (Yates, 2012). Previous studies suggest reasons that include academic difficulty, absenteeism, personal and psychological problems, financial issues (Anand A., 2018), low socioeconomic status (Nguyen M., 2022), (Tomdia-Lokes C., 2020), and mistreatment and discrimination in medical schools.

Attrition significantly impacts students, affecting self-esteem, aspirations, and future productivity with persistent psychological effects like burnout and depression (Nguyen M., 2022), (Alves S.A, 2022)). Newly established medical schools in the developing world must address attrition rates, as they can impact reputation, morale (Maher B, 2013) and research output, with consequences on national development.

Maseno School of Medicine is a relatively new medical school, having graduated six cohorts of students to date. The objectives of the study were to determine the attrition rates of students undertaking the Bachelor of Medicine and Surgery (MBChB) programme at Maseno University for the cohorts graduating between 2018 and 2023 and describe the perception of ongoing students undertaking the MBChB programme factors they perceive to be associated with attrition from the programme at Maseno University.

RESEARCH METHODOLOGY

The study applied for and received ethical approval from the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH), Institutional Ethics Review Committee.

The study employed a cross-sectional mixed quantitative and qualitative design and was executed between January and March 2024. Quantitative student data was accessed with the permission of the Dean, School of Medicine. The data covered the period from 2018 to 2023 and collected student data on admission dates, repeats, discontinuations, any other progression challenges and graduation dates. The study endpoint extended beyond the graduation timeline of six years to nine years, or one and a half times the programme duration. Data was analysed using the R programme. Results were tabulated as incidence and attrition and presented graphically as Kaplan-Meier curves. Log rank was used to determine statistical differences between curves.

The qualitative component consisted of focused group discussions with students in their fourth to sixth year of study. Student participation in the focused group discussions (FGD) was voluntary and only students who had accepted and offered signed consent to participate taking part in the FGD. Two students in each cohort were trained as research assistants and led the FGD. The FGD sessions were recorded on "Dolby On audio recording application" (version 1.8.3) and uploaded on a secure drive on the Maseno University website. Recordings were manually transcribed, and responses were entered into a coded M.S. Excel tool. Data analysis was thus conducted using M.S. Excel.

RESULTS

QUANTITATIVE ANALYSIS

Four hundred and seven student records were available for review, distributed across the six cohorts (2018 to 2023), as 62, 65, 67, 61, 72, and 80 students, respectively. Of these, 270 (66.3%) were regular, direct-entry students and 137 (33.7%) self-sponsored students.

The mean period of stay in the programme in the school of medicine was 70.8 months, with a median of 79 months, Min 3 and Max 112. One hundred and three students had not completed the programme over 112 months (9 years, four months), giving a cumulative attrition rate of 25.4%. The distribution of those failing to complete the programme were 21 absconders (5.2%), one death (0.25%), 64 discontinued on academic grounds (15.7%), one transfer out (0.25%), five voluntary withdrawals 1.2%), and 11 still active on the programme (2.7%).

Continuous attrition throughout the study period with two significant drops at the first and third-year examinations, Fig. 1. Discontinuation on academic grounds was the main cause, followed by financial reasons. The main causes contributing to academic reasons were failed courses in human anatomy in year one and human pathology examinations in year three.

There was a progressive and statistically significant increase in attrition when the consecutive cohorts (2018 to 2023) were analysed independently. Figure 2, Chi sq = 24.8, 5 degrees of freedom, $p = 0.0004$. However, consistent with all cohorts was an observable attrition at the end of year one and three examinations. Most likely, this is secondary to the long stayers, who are more common in the recent cohorts than the initial cohorts. The COVID-19 pandemic, which slowed activities worldwide, possibly also contributed (Xiaoyang Y., 2022).

A comparative assessment of the direct-entry and self-sponsored students indicated a statistically significant higher risk of attrition among the direct-entry students; Chi sq = 66.1 on 1 degree of freedom, $p = 0.0016$. However, there was no statistically significant difference in attrition between male and female students. Chi sq = 0.3 on 1 degrees of freedom, $p = 0.6$.

QUALITATIVE ANALYSIS

Out of 154 current students, 86 (55.8%) took part in the FGD sessions, with session sizes varying from 3 to 12 students. Eighty-four responses on the students' understanding of what attrition meant were recorded. The majority interpret attrition as failure to complete the programme (61.4%, 80%, 69.7%). A minority interpreted attrition as "finishing by longer than two years from required time" or repeating a class.

Regarding the causes of attrition worldwide, the reasons cited were the programme being complex, economic reasons, and lack of a social support structure, which are the top three. Specific to Maseno University, there was significant variance between the different cohorts. The senior years considered lack of university-organised accommodation (25%) and insufficient breaks (19.6%) to be the top two causes. In contrast, the junior cohort considered faculty-related (36.6%) and examinations-related causes (20%) to be the top two causes of attrition (Fig. 3).

All three cohorts considered attrition's most significant impact on the affected student would be their mental health (46%, 54%, and 46%), followed by disillusion, transition to unfulfilling careers, and loss of friendships and associations. Attrition of a student was reported to affect other parties, including the continuing students (17%), parents of the student (12%), the institution (18%) and the broader economy (39%).

Regarding the effect of attrition on the affected institution, 37 responses were recorded and categorised as shown in Fig. 4.

DISCUSSION

The attrition rate at MSU (25%), is higher than the global average of 12.5%, with significant drop-offs observed during year one and three examination periods. Two main factors contribute to this attrition rate. Firstly, students discontinued on academic grounds accounted for (16%). Discontinuation of this form occurs globally; for example, In Croatia, it is 21.2% (S.M. Kruzicevic, 2012). Locally, while the regulator does not directly administer policies for student academic performance or discontinuation, these policies vary depending on the institution. Generally, in the medical profession, failing a certain percentage of academic units per year (e.g. 50% for MSU) results in discontinuation. Without compromising education quality, the study suggests that curriculum review in the core courses of human anatomy and human pathology is required. This review can focus on areas of identification of key challenges, implementation of competency-based education, update learning objectives, and enhance student engagement:

Another contributor to attrition is the significant financial constraints preventing students from sitting examinations, leading them to defer their studies. From experience in MSU, the absconders (5.2%) likely found themselves unable to register for examinations and left to look for school fees, never to return. Financial constraints can account for up to 52% of attrition in some institutions (Tomdia-Lokes C., 2020). In Kenya, despite subsidies, student dropout continues. A review of education financing is necessary to address the high cost of medical training and associated expenses.

The lower attrition observed among self-sponsored (parallel) students could result from being generally more mature and not relying on public subsidies. Additionally, this cohort often comprises individuals perusing medical school after completing other academic courses or gaining work experience, thus being more self-directed. Interestingly, some studies report the inverse, with parallel students performing worse (Tamimi T., 2023).

However, this study found no statistical difference in attrition between the genders. This finding, however, is not uniform to all schools. Some literature report lower attrition rates in female students (Nguyen M., 2022), (Egwu O., 2010). Yet, in other studies, predominantly due to unique demands on female students, they have higher attrition from medical school. These demands include family and child-rearing responsibilities and broader family expectations (Aldahmashi T, 2021), among others.

The students' perspective cited academic difficulty, economic reasons, and lack of social support as top attrition factors. Previous studies highlight academic difficulty as a major cause (Anand A., 2018) (Maher B, 2013) with a rigorous syllabus, extensive content, elevated benchmarks, and intricate ideas. Though a challenge associated with stress and the risk of burnout, this can be addressed by prioritising effective time management, seeking support from peers and mentors, and adopting active learning strategies (Woodward A., 2018). Maseno University could also reduce attrition through structured curriculum review (pacing learning processes, adjusting content delivery methods, or designing assessments to meet student needs better), early student support when required, improved resources, wellness programmes, and faculty training for effective teaching as tried in other settings (Dyrbye L.N., 2019).

Students also cited economic reasons for student attrition from the programme. This study did not validate the economic reasons as a cause of attrition, but only the students' perception of financial reasons as a cause of attrition. However, previous reports have indicated that lower socioeconomic status was associated with a higher risk of leaving medical school in the first two years of study (AAMC, 2010). Economic factors have consistently been considered a factor in student attrition at universities (Sanchez M.P.M., 2012), specifically in medical schools (Nguyen M., 2022). In Kenya, despite government subsidies, students are still required to top up their loans to meet their needs; a challenge for low-income families lies herein.

Insufficient social support negatively impacts students' mental health and contributes to attrition, with student mental health constituting a pivotal factor in medical school attrition (Anand A., 2018) (Maher B, 2013). Research indicates that various forms of social support, including counselling, enhance students' quality of life (QoL) (Gathoni N.J., 2019),(Park K.H., 2015) and are inversely correlated with attrition rates from medical school.

The greatest impact of student attrition is on the individual exiting the programme, primarily affecting their mental health. About half of the FGD respondents indicated that mental health significantly impacts academic performance. Numerous studies confirm this connection (Zajac T., 2024) (Bantjes J., 2020), (Najmeh J., 2012), highlighting lost opportunities, lowered self-esteem and hindered self-advancement among other challenges (Egwu O., 2010). Addressing contributors to this mental health situation is an

urgent issue. Preventive, monitoring and rehabilitation programmes need to be initiated or strengthened (Broglia E., 2018).

Student attrition levels are a sign of the efficiency of the university's systems (Maher B, 2013). Low attrition has a positive effect, elevating the university's reputation, ranking research, and subsequent funding through fees, etc., while conversely, high attrition is the inverse. Irrespective, there are factors beyond the university's control, including economic challenges (individual student and national levels) and the dynamic job market demands. For the latter, the need for market-driven curricula cannot be overemphasised (Naif R.A, 2022).

High attrition harms institutional reputation in various ways. MSU should take proactive, multifaceted actions to reduce it. These steps should include improving academic support services (Nausheen F., 2018), (Obwogi J., 2013), enhancing curriculum delivery (Barefoot, 2004), strengthening programme monitoring (Cele N., 2021), and counselling services (Broglia E., 2018). Secondly, students must be encouraged to engage more and have active academic interaction at curricular and extracurricular levels. To ensure this engagement, universities must enhance teaching and learning activities through faculty development and training.

CONCLUSION

Several action plans are essential to reduce attrition. Firstly, financial support system enhancement is needed to help students afford their studies and reduce finance-related deferrals. Actions included include increasing scholarships, grants, and loan options.

Secondly, academic support must be strengthened by a review of the curriculum, particularly in challenging subjects like human anatomy and pathology. Implementing competency-based education and improving teaching methods can help students better succeed. Additionally, enhancing counselling services and mental health support is crucial, as mental health significantly impacts academic performance and attrition. Universities should also encourage student engagement in curricular and extracurricular activities to foster a supportive community.

Finally, faculty development and training are necessary to improve teaching effectiveness and provide early intervention for struggling students. MSU can reduce attrition, improve student outcomes, and enhance its reputation by focusing on these areas.

Abbreviations

FGD

Focused Group Discussions

MBChB

bachelor of Medicine and Surgery

MSU

Declarations

Funding

This study received no external funding. No benefits in any form have been or will be received by the authors from a commercial party directly or indirectly related to the subject of this article.

Data availability

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

Ethics approval and consent to participate

This study was conducted in accordance with the Declaration of Helsinki.

Ethical approval was obtained from the Institutional Ethics Committee (ISERC) of the Jaramogi Oginga Odinga Teaching and Referral HOSPITAL (JOOTRH) (approval No ISERC/ JOOTRH/769/23 dated 5th December 2023)

The aims and the methods of the study were verbally explained to the participants. Students' participation in the study was voluntary, and participants could withdraw from the study at will. They were assured of the confidentiality of their data. Each participant offered written informed consent prior to participating in the FGDs.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Figures

STUDENT ATTRITION

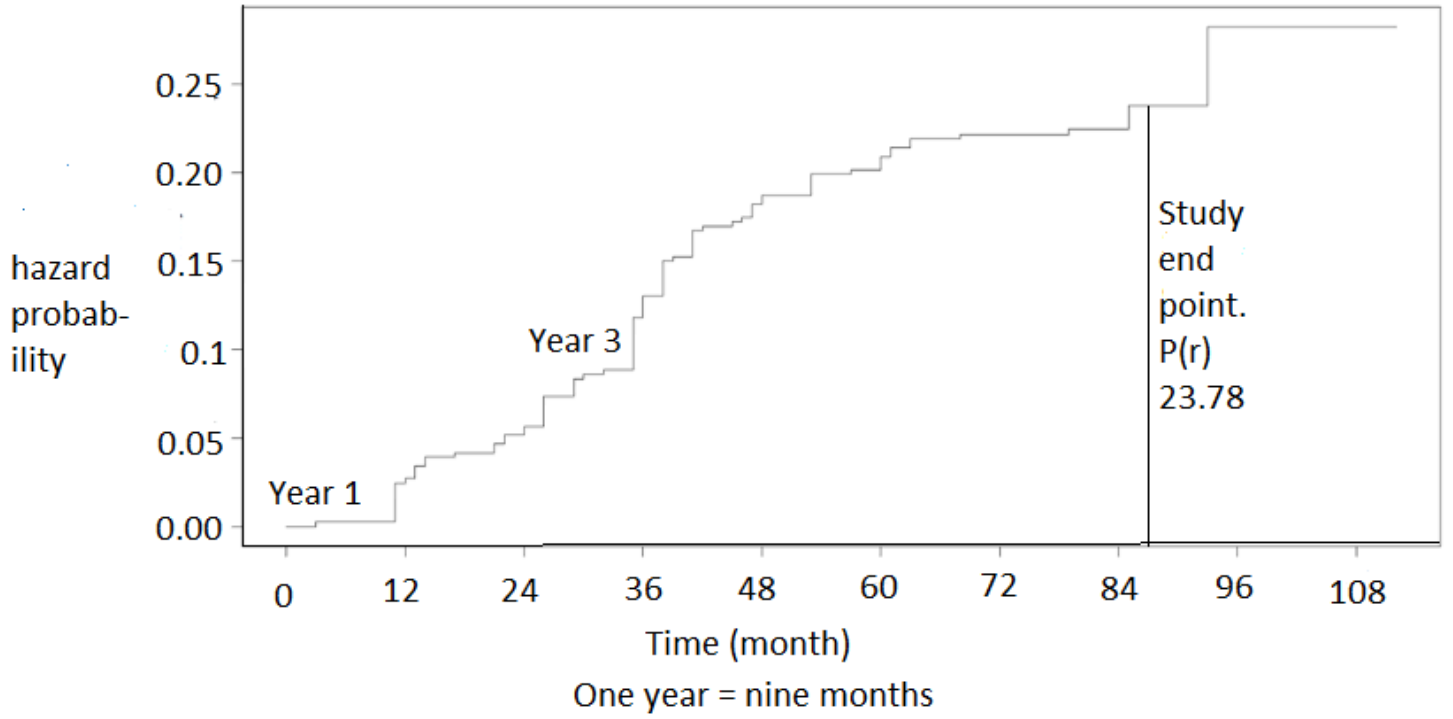


Figure 1

Attrition as per Kaplan Meir curve

STUDENT ATTRITION CURVES

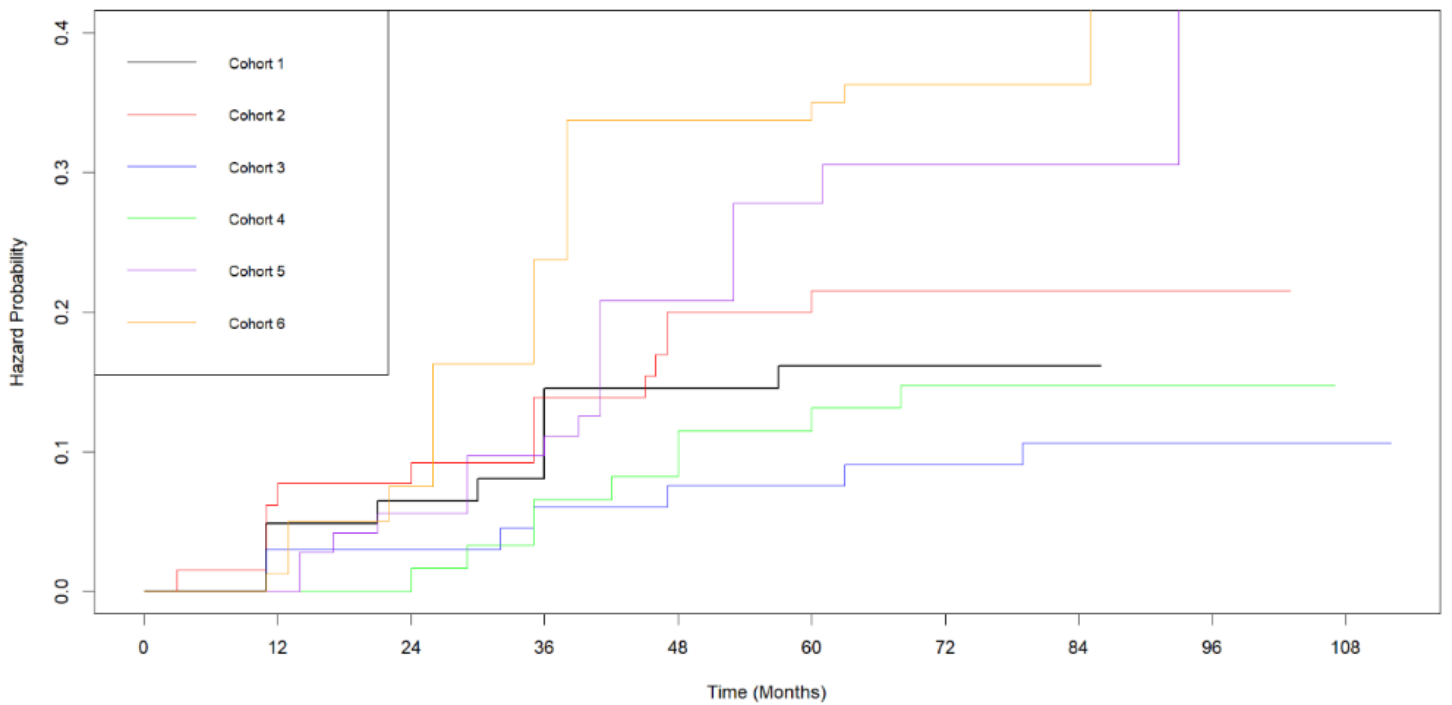


Figure 2

Risk Hazard per cohort

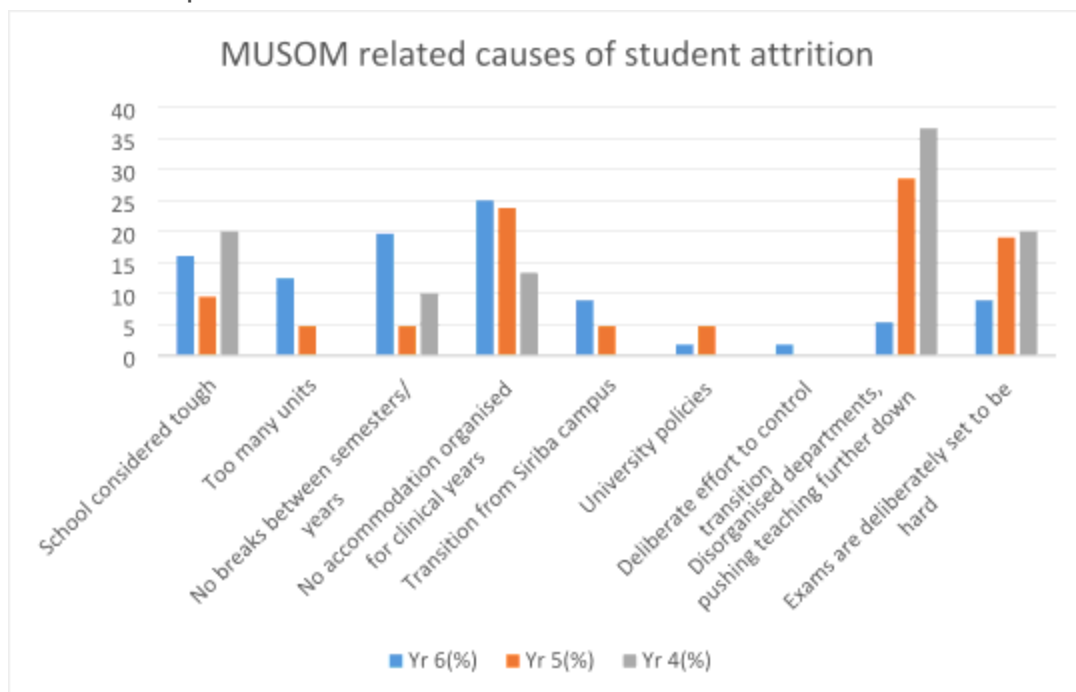


Figure 3

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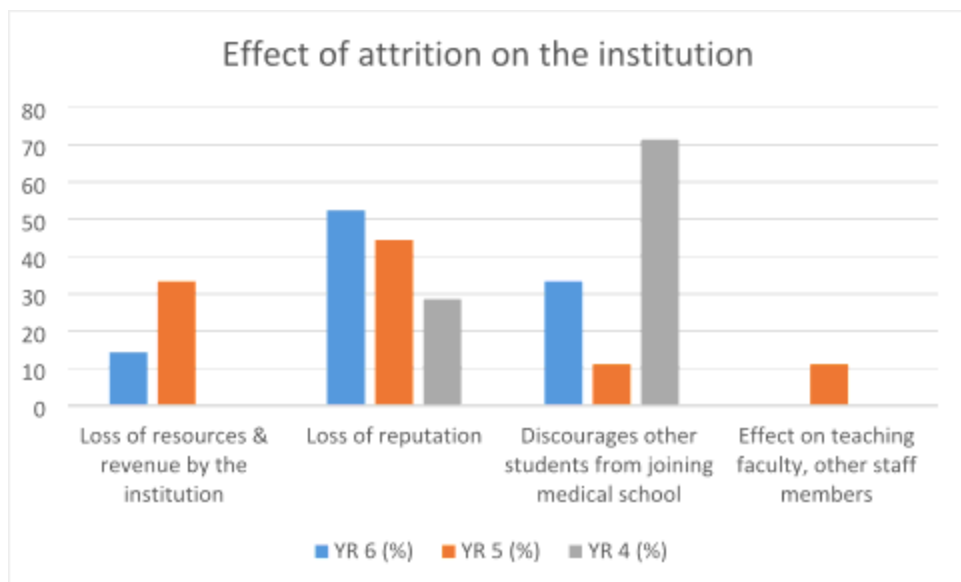


Figure 4

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