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Factors influencing turn-around time of ethics review in Tanzania: Assessment of protocol review systems

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ABSTRACT

Ethics review of health research protocols is paramount for the protection of the rights, safety, and welfare of research participants. The review of protocols is done by designated committees called Research Ethics Committees (RECs). In Tanzania, the National Research Ethics Committee (NatHREC) processes a large volume of protocols every year. Although the turnaround time of ethics review has been identified as a concern for stakeholders involved in the review process, there is a lack of comprehensive research on the specific factors that influence the duration of the review process by examining the research protocols themselves. While the long review timelines have significant implications for the timely commencement of research activities, as well as questions regarding the capacity of research ethics committees (RECs), the existing literature does not adequately address this aspect. The study aimed to assess the factors that influenced the turnaround time of ethics review at the National Health Research Ethics Committee (NatHREC) for research protocols submitted between January 2018 and August 2019. This specific time frame was chosen to capture a substantial sample of protocols and provide a comprehensive understanding of the factors affecting the review process during that period and also because during this period the REC employed two different review systems for protocol review. Several factors were identified as influencing the turnaround time of the ethics review process. Firstly, the review systems played a significant role as during the study period, the REC employed two different review systems; Precursor Protocol Review System (PPRs) and Improved Protocol Review System (IPRs) which proved to be more time-efficient. Secondly, the type of study being reviewed also had an influence on turnaround time as clinical trials had a longer review turnaround time than non-clinical trials. Additionally, the time taken for researchers to resubmit their protocols for review affected the overall turnaround time. If researchers took longer to make necessary revisions, it would naturally extend the review process. By focusing on the NatHREC, which is a prominent and nationally recognized research ethics committee, the study aimed to explore the factors that are influential within a well-established and reputable review system. Understanding the specific factors that contribute to the turnaround time at this committee would provide valuable insights for other similar committees and research ethics bodies across the country. Overall, the study highlighted the importance of addressing factors that influence the turnaround time of the review process to improve the efficiency of the process. The findings suggest that implementing the IPRS can significantly reduce the time taken for ethics review, benefiting both researchers and research participants.

KEYWORDS
Turnaround time, Review system, Reviewers, Researchers.

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Background

Ethics review is a crucial step in the research process to ensure that approved protocols are both scientifically valid and ethically sound (Ness, 2022). This process is carried out by Research Ethics Committees (RECs) with the primary goal of protecting the safety and well-being of study participants (Ness, 2022) and ensuring that informed consent is obtained without influence and coercion (Gibbs Brown, 1998). With this regard, it is expected that the review process would take some time but the actual turnaround time of the review process exceeds the expected time.

Turnaround time of the proposal review process has been the most common concern all over the world and the expedition of proposals doesn't seem to curb the issue. A study conducted in the United States found that the average time required to obtain ethics approval ranged from 12 to 15 business days in two institutions. Similarly, a study conducted in South Africa examined 53 research protocols and observed an average approval time of 14 weeks. The purpose of this study was to highlight the excessive duration of the approval process, which was attributed to bureaucratic hurdles and the complex nature of the review process (Ness, 2022).

During the ethics review process, reviewers and researchers engage in multiple correspondences to address any concerns or queries regarding the research protocol. This iterative process continues until the reviewers are satisfied that the protocol is safe and scientifically valid to be conducted in the specified research settings (Ness, 2022). Several studies have identified common concerns raised during the review of clinical trial protocols. These concerns typically revolve around the scientific design of the study, ethical considerations related to participant rights and welfare, compliance of researchers with ethical guidelines and the established procedures of the REC, and the adequacy of qualifications possessed by the researchers involved (Ness, 2022)(TMDA, 2020). These concerns reflect the multifaceted nature of ethics review, which encompasses both scientific and ethical dimensions.

Research is often timebound and has deadlines for achieving the deliverables and milestones associated with the research. Hence, delays in the approval of the research can result in difficulties in achieving the deliverables of the research in the planned timelines (Ness, 2022). Resource allocation is another aspect of research that can get negatively impacted due to delays in the review and approval of protocols which can lead to reduced feasibility of the research being done with the available budget (Ness, 2022). Delays in the turnaround time of ethics approval can also affect the ability of researchers to collaborate in research as some grants require significant collaboration from many institutions, this also affects multicenter studies (Ness, 2022). Also, delays in research approval can also impact the data collection for the research because researchers may want to speed up the process and in turn produce incomprehensive, inconclusive, or fabricated data (Ness, 2022).

The REC in this study has Standard Operating Procedures (SOPs) that were established in 2014, that outline the specific timelines for the review process (Ness, 2022). The ethics review process described by the SOPs details that when protocols are submitted for review, the REC administrators validate them and send complete applications to the assigned reviewers. This is done through the head of the secretariat. The reviewers then have a designated timeframe, as specified in the REC's SOP, to review the protocols and provide their comments. Once the reviewers submit their comments, they are forwarded to the principal investigator (the person conducting the research) for revision. The principal investigator is required to make the necessary revisions to the protocol based

on the reviewers' comments. The revised protocol is then resubmitted to the REC for another round of review. The REC will either approve the protocol or request further revisions during the next committee meeting (Ness, 2022).

The existing research on ethics review turnaround time often focuses on general perceptions, attitudes, and experiences of stakeholders involved in the process. While these studies provide valuable insights into the overall concerns and challenges (Ness, 2022), they do not specifically investigate the factors within research protocols that may contribute to the delays in the review process. Understanding these specific factors is crucial for identifying potential areas of improvement and implementing strategies to streamline the ethics review process. By assessing the protocols submitted to the REC within a designated period, this proposed study aims to bridge this research gap and shed light on the influence of different stakeholders on the review process. By examining the researchers, study design, and reviewers of research protocols, this study will provide a deeper understanding of the specific factors that contribute to prolonged review timelines. The findings will not only contribute to the existing body of knowledge but also inform research institutions, and ethics committees on potential interventions to expedite the review process and ensure efficient research initiation. Thus, this study will contribute to filling the gap in the literature by providing empirical evidence on the factors influencing ethics review turnaround time specifically at the NatHREC. The findings will not only be valuable for the NatHREC itself but also for other research ethics committees and stakeholders involved in the ethics review process, providing insights that can be used to optimize and expedite the review process, ultimately facilitating timely and ethically sound research.

Methodology

Study Design

This was a Cross-sectional Study; A cross-sectional study is a type of observational study that examines a population at a specific point in time or over a short period (Ness, 2022). In this case, the researchers examined research protocols submitted to the National Research Ethics Committee (REC) during a specific time frame.

Data Collection was Retrospective, this means that the researchers gathered data from past records or events (Ness, 2022). In this study, the researchers collected data on research protocols that were submitted to the National REC between January 2018 and August 2019. The data collection was conducted after this period had ended.

Study site

The study was conducted at the National Research Ethics Committee (REC) in Tanzania. This committee is responsible for overseeing and evaluating health research conducted in the country. Its main tasks include reviewing, approving, and monitoring research protocols to ensure ethical standards are upheld. The decision to conduct the study at the National REC was based on the fact that the committee receives a significant number of research protocols for review and approval on a daily basis. This high volume of protocols makes it an ideal location to undertake a study focused on the review process.

All protocols went through full board meetings, which were conducted twice a month. This implies that the protocols were presented and discussed during these meetings for review and approval. The pause time between these meetings was not considered in the determination of the turnaround time. Instead, it was embedded in phase 3 of the review process. This means that the time between meetings, when the committee was not actively reviewing protocols, was not factored into the calculation of the turnaround time. Additionally, the study noted that the meetings were conducted at specified times each month, indicating a regular schedule. This likely helped streamline the review process by ensuring that protocols were reviewed on a consistent basis and reducing delays caused by scheduling conflicts (Ness, 2022).

Sample Size and Data Collection Process

Sample size

The researchers used purposive sampling to recruit protocols for their study. Purposive sampling is a non-probability sampling technique where researchers select participants based on specific criteria that align with their research objectives (Ness, 2022). In this case, the researchers only included protocols that were reviewed and approved during the stated study period. To determine the sample size, the researchers employed the Yamane formula, which is a widely used formula for sample size estimation in survey research. The Yamane formula takes into account the population size and the desired level of precision. There were 200 protocols submitted to the REC during the study period. However, the number of protocols that were included in the analysis was 153.

Data collection

Data was collected from emails received by the NatHREC-secretariat for protocol review and approval. REC Administrators recorded the date of reception of the protocol, date of reception of reviewers' comments, date of resubmission, and date of protocol approval in a designated book which was also used to collect data on the timelines. A self-designed data collection tool was then used to collect and organize the data for ease of analysis.

The dependent Variable was the turnaround Time of Ethics Review which was the time taken for the ethics review process to be completed. The independent Variables included the review System used which encompassed the phases of review process; between 2018 and 2019, the REC employed two different review systems: the Precursor Protocol Review System (PPRS) and the Improved Protocol Review System (IPRS). The Precursor Proposal Review system (PPRs) was used by the REC ever since its establishment in 2002. The IPRs was introduced to improve the timeliness of the review process by improving the turnaround time in specific review phases. The timeline of the PPRs for receiving reviewers' comments was 7 days from the day reviewers receive a protocol for review. On the other hand, the IPRs required that the reviewers send comments three days after receiving a protocol for review. Researchers were afforded 30 days in both review systems for re-submission of their protocols from the day comments were sent to them. Another independent variable was the type of Study; this was categorized as clinical trials and non-clinical trials; other independent variables include Reviewers whose qualifications, areas of expertise and initial comments were recorder; The researchers whose collaborators, qualifications and resubmissions were recorded; and the protocol validation time by REC's administrators.

Data analysis and management

The study measured the time it took for a protocol to be reviewed and approved, and it divided the review process into three phases; - **a) Phase 1:** This phase measured the number of days from the reception of the protocol to the submission of initial reviewer's comments. It represents the time taken for the reception, validation and initial review of the protocol. **b) Phase 2:** This phase measured the number of days from the reception of initial reviewers' comments to the initial resubmission by the researcher. It represents the time taken by the researcher to address the reviewers' comments and make necessary revisions. **c) Phase 3:** This phase measured the number of days taken for a protocol to be approved after the initial resubmission. It includes the time required for subsequent resubmissions (if any) and the board meetings. The board meetings were held twice a month and were considered to take only one day for the purpose of analysis.

To analyze the data, the researchers used the Statistical Package for Social Sciences (SPSS). They calculated descriptive statistics such as mean, maximum value, minimum value, range and standard deviation values to summarize the data. Additionally, they conducted statistical tests by using an independent samples T-Test to determine the association between various factors and the turnaround time of protocol review. A p-value below 0.05 was used as the threshold for statistical significance, indicating evidence of a statistical influence of independent variables on the dependent variable (turnaround time of protocol review). Correlation of continuous variables was obtained through Spearman's Rho which is a non-parametric test used to measure the strength of association between two variables (Ness, 2022).

Results

Demographics of the variables

The number of protocols analyzed in the study was 153. 78 protocols were processed through the PPRS and 75 protocols through the IPRS; 134 protocols were non-clinical trials and 19 were clinical trials; For the researchers qualifications, 4 protocols were submitted by researchers having an undergraduate degree, 68 protocols were submitted by researchers with a masters' degree, and 81 protocols were submitted by researchers with a doctorate; 37 protocols had only local investigators and 116 protocols had involvement of at least one foreign investigator. Protocols assigned to reviewers with only Masters qualifications were 9, those assigned to reviewers with only doctorate qualifications were 57 and those assigned to reviewers with mixed qualifications were 87. 93 protocols were recommended after minor revisions, 57 protocols were recommended after major revisions and only 3 protocols were recommended as they were. 132 protocols were assigned to reviewers whose expertise matched the protocols' study area, and 21 were assigned to reviewers whose expertise didn't match the protocols' study area (**Table 1**).

Phases of the review process

Phase 1

Phase 1 had an average turnaround time of 8.46 days, and a Standard deviation of 8.0; The range of the number of days for phase 1 was 39 (0-39). Spearman's rho value of 0.488 a moderate positive monotonic relationship between the variables. It indicates that as the values of one variable increase, the values of the other variable tend to increase as well, but not in a perfectly consistent manner (**Table 9**).

Phase 2

Phase 2 had an average turnaround time of 27.99 days, and a Standard deviation of 22.9; The range of the number of days for phase 2 was 110 (0-110). Spearman's rho value of 0.754 indicates a strong positive monotonic relationship between the variables. It suggests that as the values of one variable increase, the values of the other variable tend to increase in a relatively consistent manner (**Table 9**).

Phase 3

Phase 3 had an average turnaround time of 17.8 days, and a Standard deviation of 18.0; The range of the number of days for phase 3 was 90 (0-89) Spearman's rho value of 0.565 suggests a moderate positive monotonic relationship between the variables. Similar to the first case, it indicates that as the values of one variable increase, the values of the other variable tend to increase, but not as consistently as in Phase 2 (**Table 9**).

The review system.

The PPRS

Phase 1 had an average turnaround time of 13.3 days, and a Standard deviation of 8.6; Phase 2 had an average turnaround time of 31.95 days, and a Standard deviation of 22.9; Phase 3 had an average turnaround time of 25.4 days, and a Standard deviation of 6.9; and the overall review time had an average turnaround time of 70.71 days, and a Standard deviation of 32.7 (**Table 2**).

The IPRS

Phase 1 had an average turnaround time of 3.41 days, and a Standard deviation of 2.4; Phase 2 had an average turnaround time of 23.88 days, and a Standard deviation of 22.3; Phase 3 had an average turnaround time of 9.90 days, and a Standard deviation of 21.8; and the overall review time had an average turnaround time of 37.15 days, and a Standard deviation of 23.1 (**Table 2**).

Based on the analysis, Phase 2 of the review process in both systems had the longest turnaround time, accounting for up to 60% of the overall review. The range of number of days of the overall turnaround time for the PPRS was 173 (11-184), and the range of number of days of the overall turnaround time for the IPRS was 113 (7-120), A P-Value of 0.00 was obtained which showed statistical significance on the overall turnaround time of the review process.

Protocol validation time

The protocols were screened and sent to reviewers within two days after submission, indicating a prompt initial processing of the submissions. Also, the validation time for protocols remained constant for all submissions. This implied that the time taken for protocol validation was not a factor in determining the overall turnaround time of the review process.

Type of Study

Non-Clinical Trial protocols.

Phase 1 had an average turnaround time of 8.39 days, and a Standard deviation of 7.8; Phase 2 had an average turnaround time of 26.52 days, and a Standard deviation of 20.3; Phase 3 had an average

turnaround time of 16.65 days, and a Standard deviation of 16.8; and the overall review time had an average turnaround time of 51.56 days, and a Standard deviation of 29.8 (**Table 3**).

Clinical Trial protocols.

Phase 1 had an average turnaround time of 9.0 days, and a Standard deviation of 9.4; Phase 2 had an average turnaround time of 38.37 days, and a Standard deviation of 35.3; Phase 3 had an average turnaround time of 25.89 days, and a Standard deviation of 23.8; and the overall review time had an average turnaround time of 73.26 days, and a Standard deviation of 46.4 (**Table 3**).

The range of the number of days for the overall turnaround time of review of clinical trials was 169 (15-184) while the range for the number of days for the overall turnaround time of non-clinical trials was 146 (7-153). Study findings revealed that Clinical trial protocols had longer review times compared to non-clinical trials. A P-Value of 0.02 was obtained which showed a statistically significant influence on the overall turnaround time of the review process.

Researcher's highest qualifications

Researchers with an undergraduate degree

Phase 1 had an average turnaround time of 2.50 days, and a Standard deviation of 2.37.8; Phase 2 had an average turnaround time of 28.50 days, and a Standard deviation of 15.0; Phase 3 had an average turnaround time of 12.00 days, and a Standard deviation of 7.8; and the overall review time had an average turnaround time of 43.00 days, and a Standard deviation of 20.3 (**Table 4**).

Researchers with a Master's degree

Phase 1 had an average turnaround time of 7.28 days, and a Standard deviation of 6.6; Phase 2 had an average turnaround time of 27.35 days, and a Standard deviation of 24.0; Phase 3 had an average turnaround time of 16.88 days, and a Standard deviation of 19.5; and the overall review time had an average turnaround time of 51.51 days, and a Standard deviation of 33.2 (**Table 4**).

Researchers with a Doctorate

Phase 1 had an average turnaround time of 9.75 days, and a Standard deviation of 9.0; Phase 2 had an average turnaround time of 28.52 days, and a Standard deviation of 22.4; Phase 3 had an average turnaround time of 18.85 days, and a Standard deviation of 17.1; and the overall review time had an average turnaround time of 57.11 days, and a Standard deviation of 33.2 (**Table 4**).

Study findings revealed that protocols whose researcher had an undergraduate degree had the least turnaround time, followed by protocols whose researcher had a master's degree while protocols whose researcher had a doctorate had the longest average turnaround time. The range of the number of days of the overall turnaround time of the review process for researchers with an undergraduate degree was 45 (22-67), the range of the number of days of the overall turnaround time of the review process for researchers with a Master's degree was 128 (9-137), and The range of the number of days of the overall turnaround time of the review process for researchers with a doctorate was 177 (7-184). A P-Value of 0.31 was obtained which meant that there was no statistical influence on the overall turnaround time of the review process.

Researchers' collaborators

Researcher with all local investigators

Phase 1 had an average turnaround time of 6.38 days, and a Standard deviation of 8.0; Phase 2 had an average turnaround time of 25.54 days, and a Standard deviation of 19.4; Phase 3 had an average turnaround time of 15.16 days, and a Standard deviation of 11.8; and the overall review time had an average turnaround time of 47.08 days, and a Standard deviation of 27.1 (**Table 5**).

Researcher with at least one foreign investigator

Phase 1 had an average turnaround time of 9.13 days, and a Standard deviation of 7.9; Phase 2 had an average turnaround time of 28.78 days, and a Standard deviation of 23.9; Phase 3 had an average turnaround time of 18.64 days, and a Standard deviation of 19.5; and the overall review time had an average turnaround time of 56.54 days, and a Standard deviation of 34.4 (**Table 4**).

The average turnaround time for Phases 1,2, 3 and the overall review time was fairly similar between protocols having all local investigators and protocols having at least one local investigator. The range of the number of days of the overall turnaround time for protocols having all local investigators was 126 (8-134) and for protocols having at least one local investigator was 177 (7-184). A P-Value of 0.09 was obtained which meant that there was no statistical influence on the overall turnaround time of the review process.

Reviewers' remarks after the Initial review

Protocols that were recommended after Minor revisions

Phase 1 had an average turnaround time of 7.67 days, and a Standard deviation of 8.0; Phase 2 had an average turnaround time of 23.18 days, and a Standard deviation of 18.3; Phase 3 had an average turnaround time of 18.14 days, and a Standard deviation of 19.3; and the overall review time had an average turnaround time of 43.99 days, and a Standard deviation of 31.1 (**Table 6**).

Protocols that were recommended after Major revisions

Phase 1 had an average turnaround time of 9.70 days, and a Standard deviation of 8.1; Phase 2 had an average turnaround time of 36.35 days, and a Standard deviation of 27.2; Phase 3 had an average turnaround time of 17.68 days, and a Standard deviation of 16.1; and the overall review time had an average turnaround time of 63.74 days, and a Standard deviation of 34.5 (**Table 6**).

Protocols that were recommended as they were.

Phase 1 had an average turnaround time of 9.67 days, and a Standard deviation of 7.0; Phase 2 had an average turnaround time of 18.33 days, and a Standard deviation of 20.8; Phase 3 had an average turnaround time of 9.33 days, and a Standard deviation of 5.5; and the overall review time had an average turnaround time of 37.33 days, and a Standard deviation of 22.4 (**Table 6**).

The turnaround time of the review process for protocols that were recommended after major revisions had longer turnaround time than protocols that received minor revisions. Protocols recommended as they were had the shortest turnaround time. The range of the overall review turnaround time for protocols that were recommended after major revisions was 173 days (11-184),

The range of the overall review turnaround time for protocols that were recommended after minor revisions was 130 days (7-137), and the range of the overall review turnaround time for protocols that were recommended as presented was 44 (18-62). A P-Value of 0.10 was obtained which meant that there was no statistical influence on the overall turnaround time of the review process.

Reviewers' qualifications.

Protocols that were Assigned to reviewers with only master's qualifications

Phase 1 had an average turnaround time of 3.33 days, and a Standard deviation of 1.0; Phase 2 had an average turnaround time of 22.56 days, and a Standard deviation of 15.1; Phase 3 had an average turnaround time of 7.67 days, and a Standard deviation of 7.4; and the overall review time had an average turnaround time of 33.56 days, and a Standard deviation of 20.5 (**Table 7**).

Protocols that were Assigned to reviewers with only doctorate qualifications

Phase 1 had an average turnaround time of 6.91 days, and a Standard deviation of 7.5; Phase 2 had an average turnaround time of 27.51 days, and a Standard deviation of 14.8; Phase 3 had an average turnaround time of 16.07 days, and a Standard deviation of 14.8; and the overall review time had an average turnaround time of 50.49 days, and a Standard deviation of 33.4 (**Table 7**).

Protocols that were Assigned to reviewers with mixed qualifications

Phase 1 had an average turnaround time of 10.1 days, and a Standard deviation of 8.4; Phase 2 had an average turnaround time of 28.87 days, and a Standard deviation of 23.0; Phase 3 had an average turnaround time of 19.98 days, and a Standard deviation of 20.2; and the overall review time had an average turnaround time of 58.86 days, and a Standard deviation of 32.8 (**Table 7**).

The turnaround time of the review process for protocols that were assigned to reviewers with Masters qualifications had the shortest turnaround time of review and protocols assigned to reviewers with mixed qualifications had the longest turnaround time of review. The range of number of days of the overall turnaround time for reviewers with masters was 53 (4-67), the range of number of days of the overall turnaround time for reviewers with doctorates was 177 (7-184), and the range of number of days of the overall turnaround time for reviewers with mixed qualifications was 144 (9-153). (P-Value of 0.54 was obtained which meant that there was no statistical influence on the overall turnaround time of the review process.

Reviewers' area of expertise in relation to the assigned protocol.

Reviewers with expertise that matched the assigned study area of the protocol

Phase 1 had an average turnaround time of 9.02 days, and a Standard deviation of 8.2; Phase 2 had an average turnaround time of 28.39 days, and a Standard deviation of 22.5; Phase 3 had an average turnaround time of 18.05 days, and a Standard deviation of 17.9; and the overall review time had an average turnaround time of 55.46 days, and a Standard deviation of 33.2 (**Table 8**).

Reviewers with expertise that did not match the assigned study area of the protocol

Phase 1 had an average turnaround time of 4.95 days, and a Standard deviation of 5.9; Phase 2 had an average turnaround time of 25.52 days, and a Standard deviation of 25.4; Phase 3 had an average

turnaround time of 16.19 days, and a Standard deviation of 19.2; and the overall review time had an average turnaround time of 46.67 days, and a Standard deviation of 31.2 (**Table 8**).

The range of the number of days of overall turnaround time when reviewers' area of expertise matched the proposals' study area was 177 days (7–184), and the number of days when reviewers' area of expertise did not match the proposals' study area was 110 (15–125). However, a P-Value of 0.25 was obtained which meant that there was no statistical influence on the overall turnaround time of the review process.

Discussion

Understanding the factors that contribute to the review process duration at the NatHREC is essential for improving efficiency and addressing potential bottlenecks. By examining the protocols submitted during the designated period, this study sought to identify specific factors such as researchers' qualifications and collaborators, reviewers' qualifications and expertise, study design, and communication between the reviewers and researchers that may influence the review timeline. The factors that influence turnaround time were analyzed in categories of; review system, REC administrators, type of study, researchers, and reviewers. Results of the study showed that the review significantly system influenced review turnaround time, the PPRS had a longer average review turnaround time than the IPRS. Protocol resubmission turnaround time also proved to be the longest phase of the review process (Phase 2). The type of study being a clinical trial or non-clinical trial also significantly influenced the turnaround time of the review process. Some studies report lengthy review turnaround times from 14 to 42 weeks in some RECs (Ness, 2022)(TMDA, 2020). In this study, the IPRS proved to have shortened the review turnaround time for all phases compared to the PPRS. In essence, results show that by implementing the IPRS, the NatHREC succeeded in increasing the efficiency of the review process. What was noted as the main factor that may have led to the shortened timelines of the review process was the difference in the number of reviewers for the two review systems; the PPRS employed three reviewers for the review of a single protocol while the IPRS employed two. And though the literature is short on the influence of the number of reviewers, it does note the importance of reviewers being qualified and well-trained in the review of health research protocols (Ness, 2022)(TMDA, 2020). Also, the IPRS had a well-defined turnaround time for the first phase of the review process which was set to be completed within three days, we presume that this was one of the actors that encouraged researchers to make timely resubmissions because on average, through the IPRS researchers responded to comments a week earlier than in the PPRS.

The NatHREC granted 30 days for researchers to address comments, but sometimes researchers take too long to make resubmissions ultimately leading to a lengthy review time. In this study, this was evident based on the provided Spearman's rho values, Phase 1 and phase 3 indicate moderate positive monotonic relationships, while Phase 2 indicates a strong positive monotonic relationship between the variables under consideration. A study done in Tanzania pointed out that the non-compliance of researchers or sometimes the disregard of guidelines set up by RECs, the weight of comments provided by reviewers (Ness, 2022), the lack of awareness of when to make resubmissions are the reasons causing protocols to have a lengthy review time or not complete the review process at all (Ness, 2022). A study done at a South African academic institution suggested that protocols whose researchers had a master's degree qualification or were seeking a master's degree had longer review timelines than those whose researchers had higher qualifications (Ness,

2022). A lack of experience in research or review processes could also lead to delays. Interestingly, the researcher's qualifications and whether they were all local investigators or had at least one foreign investigator were not found to have an influence on the average review turnaround time. It was encouraging that more than half of the analyzed protocols had at least one foreign investigator. Even though studies expose challenges of collaborative research and multisite research in terms of the review turnaround time and the bureaucracy of the process, collaborative research is encouraged for knowledge and technology transfer and more importantly, capacity building (Ness, 2022). Findings from this study did not indicate any statistical significance in the involvement of foreign investigators on the overall review time.

The influence of reviewers in the review process has been discussed in various articles and on various fronts. Studies reported that reviewers' adherence to guidelines, training on ethics, availability when needed to review a protocol, qualifications, and expertise were among the reasons hindering reviewers from efficiently performing their duties (Ness, 2022)(TMDA, 2020). Findings from this study also demonstrated that reviewers' remarks after the initial review did lead to an increased turnaround time for protocols that were recommended after "Major revisions" compared to protocols that were recommended for "Minor revisions". This is backed up by a study by (Ness, 2022) who reported the influence of professionalism and qualifications of reviewers with regards to the comments they provide to researchers and how these remarks serve to improve protocols and adherence to ethical guidelines. There were instances where some protocols were assigned to reviewers who did not have expertise in that study area this could have been due to the workload on reviewers with the right expertise or availability of reviewers with the right expertise (Ness, 2022). However, reviewers' qualifications and whether the protocol assigned to them matched their areas of expertise were not found to have an influence on the average review turnaround time.

Clinical trial studies undergo a more rigorous review process compared to non-clinical trial studies due to the potential risks involved in the interventions being tested (Kimmelman, 2004). These studies involve interventions that may pose more than minimal risk to human participants(Ness, 2022)(TMDA, 2020). The need for a stricter review process arises from the ethical and safety considerations associated with conducting research on human subjects (Ness, 2022). In the context of the United States, the Food and Drug Administration (FDA) is responsible for overseeing and regulating clinical trials (Ness, 2022). The FDA's review process for clinical trial approvals typically takes a considerable amount of time, often up to 8 months (Ness, 2022). This extended duration is necessary to ensure that all relevant aspects of the study, including participant safety and adherence to regulatory requirements, are thoroughly evaluated. Clinical trial protocols, which outline the procedures and methodologies to be followed during the study, have additional requirements compared to non-clinical trial protocols. Some of these requirements include the provision of investigator brochures, which contain comprehensive information about the investigational product being tested. Additionally, the protocols must include a list of members for the Data and Safety Monitoring Board, a group responsible for monitoring participant safety during the trial. Moreover, insurance coverage is an essential component to protect participants in case of adverse events or injuries resulting from the study. (Ness, 2022)(TMDA, 2020). To ensure a comprehensive and accurate review of clinical trial protocols, it is crucial to appoint reviewers who possess expertise in the field of clinical trials (Ness, 2022). These experts have the necessary knowledge and experience to assess the scientific validity, ethical considerations, and safety measures of the proposed study.

Appointing clinical trial experts as reviewers helps maintain the integrity of the review process and ensures that all aspects of the study are adequately evaluated.

Conclusion

The findings of the study revealed several issues, and implementing certain strategies proved effective in reducing the review turnaround time. Specifically, two interventions were successful: reducing the number of reviewers assigned to each protocol and setting shorter timelines for the different review phases. By decreasing the number of reviewers assigned to a single protocol, the review process became more streamlined and efficient. This approach likely allowed for better coordination and communication among the reviewers, facilitating quicker decision-making. Additionally, setting shorter timelines for the review phases helped expedite the overall process. By imposing stricter time limits, the review stages were completed more promptly, reducing delays and ensuring timely completion of the ethics review.

The study also emphasized the importance of various stakeholders in improving the turnaround time. The REC administrators, reviewers, and researchers all played vital roles in enabling and enhancing the efficiency of the review process. The administrators of the REC hold a significant responsibility in managing the workflow and resources of the committee. By implementing strategies such as optimizing reviewer assignments and establishing efficient protocols, administrators can contribute to reducing the review turnaround time. Reviewers, on the other hand, are responsible for evaluating the protocols and ensuring their compliance with ethical standards. By actively participating in the review process and adhering to the prescribed timelines, reviewers can facilitate faster decision-making and contribute to shorter review durations. Finally, researchers submitting protocols for review also have a role to play. They can support the process by promptly resubmitting their protocols after addressing any queries or concerns raised by reviewers. The involvement and cooperation of REC administrators, reviewers, and researchers are crucial in improving the overall efficiency of the ethics review and lessening the burden on all parties involved.

Overall, there is a need for more empirical research that directly examines the research protocols themselves to identify the specific factors that influence ethics review turnaround time. Such research will help fill the current gap in understanding and provide actionable insights for stakeholders seeking to enhance the efficiency and effectiveness of the ethics review process. The findings will help inform NatHREC and other ethics committees about potential areas for improvement, allowing them to streamline their processes, reduce delays, and enhance research initiation timelines.

Acknowledgments and author contributions

The authors worked together to compile this manuscript; D.M. collected, analyzed, and interpreted the data. He also wrote the first draft of the manuscript. M.A, R.J, P. K and M.K. supervised data collection commented on the analysis and interpretation of the data, and were major contributors in writing the manuscript. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

This study was reviewed and approved by the REC of the Muhimbili University of Health and Allied Sciences (MUHAS-REC-03-2021.517) dated 08th March 2021. Approval for data collection

(NIMR/HQ/R.8a/VOL II of 2020/111) was obtained from NIMR on 25th March 2021. A waiver of informed consent was requested from the respective ethics committee as no interview was conducted in this study. Proposals were only used for timeliness data analysis no identifiers were used and anonymity of proposals was observed. This study was done under the supervision of MUHAS supervisors and staff of the national REC.

Disclaimer:

The study was conducted at the national REC that hosts the national research ethics committee. The results obtained are not representative of the situation of other RECs in Tanzania. The PPRS and IPRS were employed only for full board reviews, the results do not represent other review processes. However, the findings of the study can serve as the basis for further research into factors influencing the turnaround time of ethics review and as a basis for the creation of review systems that will shorten the review turnaround time.

Figures and Tables

Table 1: Demographics of the factors influencing turnaround time of ethics review.

Variables	Sub variables	Frequency (*n*)
Review system	PPRS	78
	IPRS	75
Type of Study	Non-clinical trial	134
	Clinical Trial	19
Researcher qualifications	Master's degree	68
	Doctorate	81
	Undergraduate degree	04
Type of collaborator	Local	37
	Foreign	116
Reviewers' remarks after the Initial review	Major	57
	Minor	93
	Approved as is.	03
Reviewers' academic qualification	Masters-Masters Pair	09
	Doctorate- Doctorate pair	57
	Doctorate-Masters pair	87
Reviewers' area of expertise in relation to the assigned protocol.	Match	132
	Mismatch	21

Table 2: Turnaround time of the review process in relation to the review system.

Stage of review	Review system	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	PPRS	13.32	8.612			
	IPRS	3.41	2.366			

Stage of review	Review system	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 2	PPRS	31.95	22.883			
	IPRS	23.88	22.331			
Phase 3	PPRS	25.44	21.793			
	IPRS	9.85	6.986			
Overall Review Time (*ORT*)	PPRS	70.71	32.764	173	11-184	0.00
	IPRS	37.15	23.181	113	7-120	

Table 3: Turnaround time of the review process in relation to the type of study.

Stage of review	Type of study	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	Non-clinical trial	8.39	7.890			
	Clinical Trial	9.00	9.404			
Phase 2	Non-clinical trial	26.52	20.324			
	Clinical Trial	38.37	35.307			
Phase 3	Non-clinical trial	16.65	16.851			
	Clinical Trial	25.89	23.893			
Overall Review Time (*ORT*)	Non-clinical trial	51.56	29.884	146	7-153	0.02
	Clinical Trial	73.26	46.468	169	15-184	

Table 4: Turnaround time of the review process in relation to the Researcher's qualifications.

Stage of review	Researcher's qualification	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	Undergraduate degree	2.50	2.380			
	Masters	7.28	6.682			
	Doctorate	9.75	9.012			
Phase 2	Undergraduate degree	28.50	15.022			
	Masters	27.35	24.066			
	Doctorate	28.51	22.411			
Phase 3	Undergraduate degree	12.00	7.874			
	Masters	16.88	19.541			
	Doctorate	18.85	17.107			
Overall Review Time (*ORT*)	Undergraduate degree	43.00	20.347	45	22-67	0.31
	Masters	51.51	33.248	128	9 -137	
	Doctorate	57.11	33.261	177	7-184	

Table 5: Turnaround time of the review process in relation to the type of collaborator.

Stage of review	Protocol researchers	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	All Local	6.38	8.050			
	At least one Foreign	9.13	7.985			
Phase 2	All Local	25.54	19.474			
	At least one Foreign	28.78	23.914			
Phase 3	All Local	15.16	11.880			
	At least one Foreign	18.64	19.570			
Overall Review Time (*ORT*)	All Local	47.08	27.149	126	8-134	0.09
	At least one Foreign	56.54	34.445	177	7-184	

Table 6: Turnaround time of the review process in relation to the reviewers' remarks after the initial review.

Stage of review	Initial reviewers' remarks	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	Major revisions	9.70	8.100			
	Minor revisions	7.67	8.045			
	Approved as is.	9.67	7.024			
Phase 2	Major revisions	36.35	27.259			
	Minor revisions	23.18	18.302			
	Approved as is.	18.33	20.841			
Phase 3	Major revisions	17.68	16.163			
	Minor revisions	18.14	19.378			
	Approved as is.	9.33	5.508			
Overall Review Time (*ORT*)	Major revisions	63.74	34.553	173	11-184	0.10
	Minor revisions	48.99	31.112	130	7-137	
	Approved as is.	37.33	22.480	44	18-62	

Table 7: Turnaround time of the review process in relation to the reviewers' qualifications.

Stage of review	Reviewers' qualifications	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	Masters-Masters Pair	3.33	1.000			
	Doctorate- Doctorate pair	6.91	7.517			
	Doctorate-Masters pair	10.01	8.438			
Phase 2	Masters-Masters Pair	22.56	15.101			
	Doctorate- Doctorate pair	27.51	23.818			
	Doctorate-Masters pair	28.87	23.070			
Phase 3	Masters-Masters Pair	7.67	7.433			

Stage of review	Reviewers' qualifications	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
	Doctorate- Doctorate pair	16.07	14.842			
	Doctorate-Masters pair	19.98	20.225			
Overall	Masters-Masters Pair	33.56	20.507	53	4-67	0.54
Review Time	Doctorate- Doctorate pair	50.49	33.497	177	7-184	
(*ORT*)	Doctorate-Masters pair	58.86	32.845	144	9-153	

Table 8: Turnaround time of the review process in relation to the Reviewers' area of expertise in relation to the assigned protocol.

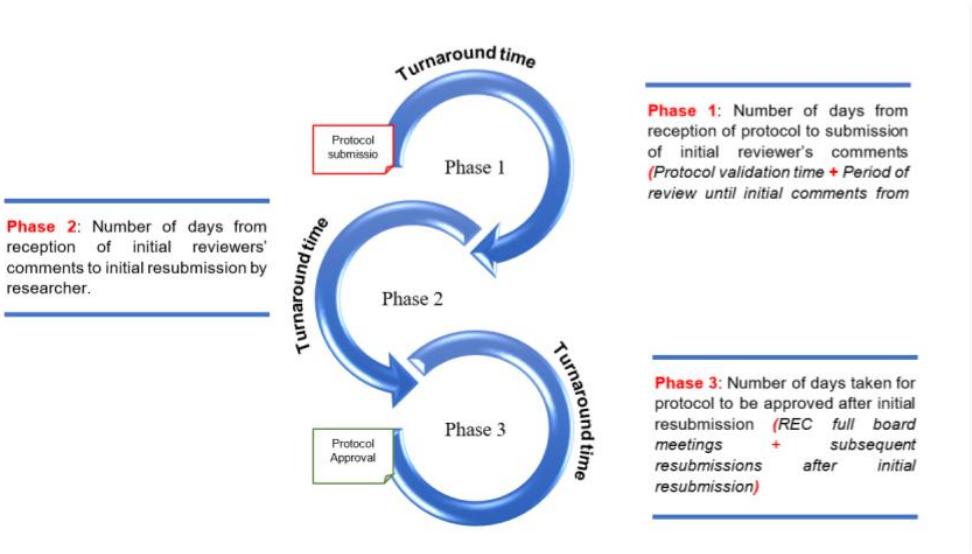
Stage of review	Reviewers' expertise vs protocol's study area	Mean	Std. Deviation	Range	Minimum – Maximum	P-value (*ORT*)
Phase 1	Match	9.02	8.266			
	Mismatch	4.95	5.599			
Phase 2	Match	28.39	22.542			
	Mismatch	25.52	25.490			
Phase 3	Match	18.05	17.901			
	Mismatch	16.19	19.268			
Overall	Match	55.46	33.224	177	7-184	0.25
Review	Mismatch	46.67	31.210	110	15-125	
Time (*ORT*)						

Table 9: Turnaround time of the phases of the review process and correlation to overall review turnaround time.

Stage of review	Mean	Std. Deviation	Range	Minimum – Maximum	Overall Review Time *(Spearman's rho).*
Phase 1	8.46	8.061	39	0-39	0.488
Phase 2	27.99	22.900	110	0-110	0.754
Phase 3	17.80	18.040	89	0-89	0.565

Figure 1: Phases of review time and their description

Figure 1: Displays the description of phases of the review process. - a) Phase 1; the number of days from reception of protocol to submission of initial reviewer's comments; b) Phase 2; the number of days from reception of initial reviewers' comments to initial resubmission by the researcher; and c) Phase 3; the number of days taken for the protocol to be approved after initial resubmission. This phase includes the number of resubmissions. since board meetings were conducted twice a month, time pauses between one meeting and another were not included in the analysis as meeting deliberations always took only one day.



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