

| COMMENTS                                                                                                                                                                                                                                                               | STUDENTS, RESPONSE TO EXAMINERS COMMENTS                                                                                                                                                                                                                                                                                                                                                  |
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| EXAMINER 1                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                           |
| 1. There are several sections of the problem statement that need to be updated to reflect more recent numbers                                                                                                                                                          | <p>These numbers have been updated to recent numbers to read on page 1 to read as</p> <p><b>Globally, 13.6 billion doses of vaccines have been given as of May 30, 2025. There have also been 7,010,681 deaths and 704,753,890 confirmed cases of COVID-19 worldwide (WHO, 2024). Ghana, however, has recorded 1,462 COVID-19-related mortalities as of May 30<sup>th</sup>, 2025</b></p> |
| 2.The significance of the study needs to be well articulated in this section.                                                                                                                                                                                          | <p>These have been well articulated on page 8 to read as</p> <p><b>development of post-COVID complications have the potential of crippling the health system when HCWs develops them</b></p>                                                                                                                                                                                              |
| 3. Various sections of the thesis that report on COVID-19 should treat it as a past event and not an ongoing event. I understand that this study was started during the COVID-19 pandemic; however, at the time of defense, we are no longer dealing with the pandemic | <p>The writings have been changed to the past tense across the work</p>                                                                                                                                                                                                                                                                                                                   |

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| <p>4. Examine the effect of COVID-19 on multiple health outcomes as well as the mediating effect on lifestyle activities, family/work-related support, and history of comorbidity. While this objective is almost accurate, it is not clear what the mediating variable is? Kindly consider clarifying this. Again, from the research questions, it is not clear whether exposure to COVID-19 is the mediating factor or there is something else.</p> | <p>This has been addressed in objective 2b to read as</p> <p><b>b. To investigate the mediating effect of lifestyle/physical activities, family/work-related support, and history of comorbidity between COVID-19 and health outcomes as well as presenteeism</b></p>                                                                                                                                                                                        |
| <p>5. I do see multiple direct effects, multiple mediating effects, multiple moderating mediating effects, and indirect effects. The student should specify which relationships are being explored.</p>                                                                                                                                                                                                                                               | <p>This has been addressed on page 10 to read as</p> <p><b>The conceptual framework in Figure 1.1 shows direct relationship between COVID-19 exposure status and health outcomes, as well as presenteeism. It also conceptualizes from literature the mediating effect of history of comorbidities, lifestyle/physical activity, as well as family/workplace support in the relation between COVID-19 exposure and health outcomes, and presenteeism</b></p> |

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| <p>6. The reason for using either a fixed effect or mixed effect binary logistic regression should be provided.</p>                                                                                                                                                           | <p>This has been addressed on page 64 and read as</p> <p><b>These regression models were used to understand the within-groups variations as well as the account for hierarchical nature of the data.</b></p>                                                                                                             |
| <p>7. Please explain why an interaction between COVID-19 exposure status and time was necessary.</p>                                                                                                                                                                          | <p>This has been addressed on page 66 and read as</p> <p><b>The interaction between COVID-19 exposure and time on the outcome was important to understand the likely changes between baseline to endline.</b></p>                                                                                                        |
| <p>Earlier on, the student indicated significance at 0.05. However, at one point, the student reports that vaccination status among the HCWs was also significant at <math>p=0.24</math>. I am not sure this is consistent with the general understanding of significance</p> | <p>This has been rectified on page 74 and now reads as</p> <p><b>Vaccination status among the HCWs was not significant (<math>p=0.24</math>), with the majority in the unexposed group having received a full dose of the vaccination compared to those in the exposed group (340/504, 67.5% vs 188/252, 74.6%).</b></p> |

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| 8. Implication for the study in relation to practice is missing                                                                                                                                                                                                                                                                                                                                   | <p>This has been addressed on page 139 and reads as</p> <p><b>The Ministry of Health should develop clinical practice guidelines for the management of COVID-19 among HCWs. This is key to reducing post COVID-19 complications</b></p> |
| <b>EXAMINER 2</b>                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                         |
| 1.The opening paragraph of the thesis refers to the death of a patient from MERS. This is tangential to the topic and the writing would be more concise if it started with COVID-19,                                                                                                                                                                                                              | <p><b>There are other forms of coronaviruses that cause diseases of which COVID-19 is one. Giving a historical background was key to understanding how the same causative organisms have caused diseases</b></p>                        |
| 2. The problem being investigated is clearly stated but the rationale needs to be more strongly presented. A scarcity of research on this topic in Ghana is not enough justification if there is research from similar contexts. What new knowledge the study is bringing must be clearly articulated. Some of the gaps identified in the literature review can be used to augment the rationale. | <p><b>This has been addressed in the comments made by examiner 1</b></p>                                                                                                                                                                |

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| <p>3. The objectives of the study are clearly stated though it would be advisable to break up Objective 2 into two separate objectives.</p>                                                            | <p>This has been addressed in objective two to read as</p> <p><b>2. a. To determine the effect of COVID-19 on health outcomes (that is, psychological health, lung function), and blood pressure.</b></p> <p><b>b. To investigate the mediating effect on lifestyle/physical activities, family/work-related support, and history of comorbidity.</b></p> |
| <p>4. There is no theoretical underpinning to the research provided. This should be rectified as the conceptualization of the study must be informed by both theoretical and empirical literature.</p> | <p><b>Whiles showing a theory underpinning this work, it wasn't used for this thesis as the researcher relied on current literature review on COVID-19</b></p>                                                                                                                                                                                            |
| <p>5. The placement of the conceptual framework is in the first chapter. It should be guided by the literature and should follow the literature review.</p>                                            | <p><b>The placement of the conceptual framework is based on the guidelines given by the School of Graduate Studies</b></p>                                                                                                                                                                                                                                |

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| <p>6. A depth of data was collected for the study.</p> <p>The use of an ambi-directional approach which combines prospective with retrospective data collection is commendable.</p> <p>However, the fundamental concern with the study is starting the study with the exposed and unexposed groups. Baseline information should precede the treatment, which in this case is COVID-19.</p> | <p><b>Baseline information from the various groups were taken, including their COVID-19 status</b></p>                                                                       |
| <p>7. Given that this is a longitudinal design, there should be a section on attrition. If there was none then it should be noted</p>                                                                                                                                                                                                                                                      | <p><b>There was no attrition across the data collection point as non was lost to follow up</b></p>                                                                           |
| <p>8. It appears Appendix 2 presents one questionnaire so it is not clear what was collected at baseline, mid-line and end-line.</p> <p>This should be clearly indicated in the appendix</p>                                                                                                                                                                                               | <p><b>This is because a repetitive measure was done in month 3 and month 6, aside the sociodemographic data which was collected at baseline</b></p>                          |
| <p>9. The selection of hospitals for the study states they were selected because they were treatment centres that had testing for health workers. It should be stated if they were the only treatment centres or only facilities that were testing workers. And if they were not the</p>                                                                                                   | <p><b>As clearly stated in page 60, these facilities were the major COVID-19 treatment centres in Accra and had majority of the HCWs being infected with the disease</b></p> |

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| only ones then the basis for their selection must be provided.                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10. Section 3.9.3 references a multi-level regression but there is no information provided on how many levels and what is being measured at each level and it is not clear from the results presented that a multi-level model was run.                     | <p>This has been addressed on pages 79 and 80 and reads as</p> <p><b>For the multi-level generalized logistic regression analysis, all variables (socio-demographic, work and professional-related, family and personal history of a chronic condition, lifestyle, family and workplace support, and COVID-19-related characteristics) were considered for the final generalized binary logistic regression model. Seven models were generated after controlling all potential confounding factors.</b></p> |
| 11. The thesis does not provide the full table of regression results and only notes the variables controlled without presenting those results. This is not appropriate. All the results must be presented. If not in the main thesis, then in the appendix. | <p><b>All the regression results were provided. As stated in the method session, only the significant variables in the bivariate analysis were used for the regression.</b></p>                                                                                                                                                                                                                                                                                                                             |

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| 12. Two different tables are numbered 4.1                                                                                                                                                    | <b>Only one table was labelled 4.1 on page 85</b>                                                                                                                                                                                                                                                                                                                                        |
| <b>EXAMINER 3</b>                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                          |
| 1.While the background appears comprehensive, it lacks global, continental, and national statistics on infections and deaths among HCWs.                                                     | This statistics was captured in the background as<br><b>Globally, 13.6 billion doses of vaccines have been given as of May 30, 2025. There have also been 7,010,681 deaths and 704,753,890 confirmed cases of COVID-19 worldwide (WHO, 2024). Ghana, however, has recorded 1,462 COVID-19-related mortalities as of May 30<sup>th</sup>, 2025</b>                                        |
| 2. The problem statement should be specific about the types of post-recovery complications being investigated (e.g., psychological health, blood pressure, lung function, and presenteeism). | <b>This has been addressed in page 8 to read as<br/>This demonstrates how essential it is to recognize those presenting with signs of psychological symptoms and to initiate a more intensive treatment plan to ensure increased productivity, as development of post-COVID complications including depression anxiety, stress, hypertension, reduced lung function and presenteeism</b> |



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|                                                                                                                                                                                                                                                                                                                                                       | <p><b>have the potential of crippling the health system when HCWs develops them</b></p>                                                                                                                                                                                                                                                                                                                                   |
| <p>3. The candidate also states that the study will inform the Ministry of Health about the need to increase staff numbers and provide PPEs. This is information that the Ministry would be expected to know so what is the study adding from the policy and practice perspective? The study's relevance in 2025 must also be strongly justified.</p> | <p>This has been addressed as</p> <p><b>Furthermore, this study will inform the Ministry of Health about providing health workers with the needed personal protective equipment (PPEs) to reduce the risk of infection, as well as development clinical practice guidelines on the management of COVID-19 among HCWs.</b></p>                                                                                             |
| <p>4. The objectives should be specific about the types of health outcomes being studied (e.g., psychological health, blood pressure, lung function). This would provide a clearer roadmap for the reader.</p>                                                                                                                                        | <p>This was clearly stated in the specific objectives as</p> <p><b>To determine the effect of COVID-19 on health outcomes (that is, psychological health, lung function, and blood pressure and to investigate the mediating effect on lifestyle/physical activities, family/work-related support, and history of comorbidity.</b></p> <p><b>3. To determine the effect of COVID-19 on work output (presenteeism)</b></p> |

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| 5. The third objective, which focuses on work output (presenteeism), could have been expanded to include the potential economic impact of reduced productivity among HCWs, as this is a critical aspect of the study.                                                     | <b>This will be taken into consideration during my post-doctoral fellowship</b>                                                                                                                                                                                                                                                                                                                  |
| 6. The study design is appropriate, but the candidate should provide more justification for why an ambi-directional cohort design was chosen over other potential designs (e.g., a purely prospective cohort study) to clarify the rationale behind the choice of design. | This has been addressed on page 61 and read as<br><br><b>An ambi-directional cohort study was undertaken to determine the impact of COVID-19 on healthcare workers' health and work output. This design was vital as it combines the strength on both retrospective and prospective cohort studies, allowing for a more comprehensive assessment of exposure-outcome relationships over time</b> |
| 7. While these are well-established tools, a brief discussion of their validity and reliability in the Ghanaian context would strengthen the methodology                                                                                                                  | This has been addressed on pages 75 and 75 and read as<br><br><b>The tool reported high internal consistency within the Ghanaian context with Cronbach alpha: depression- 0.84-90, anxiety- 0.78-0.85 and stress- 0.80-0.89. In relation to validity DASS-21 correlates well with other</b>                                                                                                      |

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|                                                                                                                                                                                                                                                                    | <p>mental health measures such as the GHQ-12 and PHQ-9.</p> <p>The tool, tested among academic staff in Ghana reported Cronbach's alpha values between 0.72 and 0.85, indicating a good internal consistency.</p> |
| <p>8. Provide details on the handling of missing data, particularly in the longitudinal analysis.</p> <p>Given that the study spans six months, attrition and missing data are likely to be issues, and the candidate should explain how these were addressed.</p> | <p><b>There was no attrition during the data collection</b></p>                                                                                                                                                   |
| <p>9. Please add areas for future research based on the study's findings</p>                                                                                                                                                                                       | <p><b>This has been addressed on page 155</b></p>                                                                                                                                                                 |
| <p>10. The recommendations could also be more targeted to the specific context of Ghana. For instance, the author could suggest specific policy changes or interventions that could be</p>                                                                         | <p><b>This has been addressed on pages 153 and 154</b></p>                                                                                                                                                        |

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| implemented by the Ghana Health Service or<br>the Ministry of Health |  |
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