

Proposal Title:

“An Analysis of Nepal’s Clinical Pediatric Services and Policies to Address Child Mortality”

Full Names of Proposing Researchers:

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Affiliation to International Socioeconomics Laboratory of Proposed Study:

Summer Socioeconomics Research Fellowship affiliated with Yale University

Abstract, briefly give an overview of the empirical study at hand. The abstract should provide what ORIGINAL data will be found and there must be a summary of what each section of your research proposal entails. (100-200 Words) :

The study primarily focuses on assessing how effective are current services and policies at addressing and improving child health in Nepal. More than 45% of children perish before the age of 5, and the neonatal and infant mortality rates have persisted as an issue over the last decade (Humanium, n.d.). The study is divided into three phases with the first one using the 2015 Nepal Health Facility Survey data to conduct a statistical comparison of clinical pediatric services available in hospitals in high-income areas versus low-income areas. The second phase is based on a field survey assessing the mental health services available for infants, early teens, and adolescents. The third phase of this study would employ statistical analysis of Nepal Health Facility Survey 2016 data to measure the impact of several government-supported policies and the link between distance to a health facility and child health outcomes. All three phases will involve a literature review of innovative policies and services worldwide that boost child health. Our study results are expected to reveal a significant disparity in child pediatrics between higher and lower-income districts, a substantial negative impact of distance from a health facility, and disruptive approaches that could be implemented in healthcare services and government policy.

Background, surveying current literature, and background on the socioeconomic issue at hand, along with the purpose of the project. This section should answer why the research you intend on doing is important, and how it is relevant/builds off of previous works. (300-400 Words)

The research fundamentally revolves around this statement: “For young Nepalese, high-quality pediatric care is a must”. Nepal has a total population of around 29,675,374; the 12 million children in the country account for about 40% of that (Worldometer, 2021). More than 45% of children perish before the age of 5, and 21% of those under the age of five are underweight. (Humanium, n.d.). Furthermore, the present healthcare facilities do not provide the whole spectrum of services required for child health; there is a scarcity of qualified healthcare personnel and facilities and the few pediatric hospitals available are centered within just the capital city. At every step of a child’s physical and mental development, there are clear health risks. The neonatal mortality rate (number of deaths during the first 28 days of life per 1000 live births in a year) is 21 and the infant mortality rate (number of infant deaths for every 1000 live births) is 32 (World Health Organization, 2015). Additionally, as children grow older, many face issues with mental health. In fact, the Ministry of Health and Population of Nepal estimates that about 15–20% might be suffering from some form of mental disorder (Ministry of Health and Population of Nepal, 2014). While government policies like the Second Long-Term Health Plan from 1997-2017 have aimed within 20 years to address these issues, far more progress is needed. At a service level, for instance, there is only one government-run hospital for children and only one child/adolescent mental health unit in the country while private hospitals have not been easily accessible. While the WHO suggests countries having 5

hospital beds per 1000 children, Nepal has merely 475 total beds to treat about 12 million children (KIOCH, 2021). Clearly, the situation is dire, which is why the Kathmandu Institute of Child Health (KIOCH) is creating a hub within Kathmandu and satellite hospitals in each province that will provide clinical pediatrics and mental health services for youth. For this research project, we will support KIOCH by conducting evidence-based research on how child health can be improved in a myriad of different ways throughout the country.

Specific Aims, providing the Question & Hypothesis the study and should answer the approach of the study. (100-150 Words)

We aim to explore: *How effective are current Nepali services and policies at addressing and improving child health?* Our first focus will be clinical pediatrics, which will involve comparing clinical pediatric services in lower and higher-income districts, studying the current youth mental health services offered, and researching innovative approaches that have been successful worldwide. Our other focus will be to research the broader causes of child mortality in Nepal while analyzing both current and potential government policies that could improve the situation in the nation. We hypothesize that our findings will reveal a stark divide between higher and lower income districts in child pediatrics, a large negative impact of a family's distance from a health facility on their health outcomes and decisions, and disruptive approaches that can be implemented in child healthcare services and policies, including in the often overlooked field of youth mental health.

Materials & Methods, detailing how data samples will be collected, archived and processed to produce required data. A clear plan must be included, as well as any questionnaires that may be needed for surveys. Any anticipated permission needed to collect samples must also be documented. (200-300 Words)

Phase 1: First, the analysis of Nepal's clinical pediatric services will be conducted. This will be done in several ways, the first of which will be a comparison of the presence of different clinical pediatric services, essential medicines, equipment, staff, and other components of proper child healthcare in hospitals that are based in lower-income districts as opposed to those that are based in higher-income districts. The data would be obtained from the 2015 Nepal Health Facility Survey dataset, which can be accessed on the Demographics and Health Surveys Program website after registering as a user and submitting information on how the data will be used (Ministry of Health, 2017). The dataset contains a sample of 963 health facilities in Nepal, includes the districts in which they are located, and the aforementioned variables that will be looked for. The income levels of each district will be researched and the hospitals will be categorized by the income level/bracket of their area. Finally, statistical tests mentioned in the Discussion section will be utilized with the RStudio software to measure the level of correlation between the hospital location's income level and the aforementioned components of proper child health care. Additionally, a literature review will be conducted to investigate whether there are any new, innovative approaches to clinical pediatrics worldwide that could be incorporated by KIOCH. The materials for this review are simply international literature and case studies regarding clinical pediatric services.

Phase 2: This phase will be focused on setting up a virtual meeting with professionals from both mental health and Pediatrics sector. These meetings will take place from aug 1 to aug 4. Appointment with the authority will be taken over phone call a few days before the physical meeting. The doctors that have agreed till now are Dr. Abhimanyu (Mental Health), Dr. sneedha Mainali (Pediatrics) and doctors from centre of mental health counselling. A couple of doctors like Dr. Urusha Naaz, Pawan sharma (Mental Health) And nepal pediatric society are still in que but hoping to hear positive response from the. We have prepared two set of questions accordingly and the questions to be asked will be divided within the researchers. To be more precise, each researcher will get a doctor or two.

The doctors at both facilities will be asked about what they believe are the main issues with mental health and pediatrics problem and their care for youth at their facilities and in Nepal as a whole and will receive an opportunity to discuss their own recommendations for the future. The information will be stored in the Google Drive folder of the research team. Additionally, research will be conducted about the youth mental health services offered at children's hospitals worldwide in order to identify the most successful and unique approaches globally. The sources of data will be from scholarly publications, government reports and journals.

Phase 3: As per KIOCH's specific request, this project will also delve into the broader causes of child mortality within Nepal and consider potentially disruptive government policies that could create change. The existing literature about the instigators of Nepal's child health issues and the government's current responses will be reviewed. This information will be compared with successful responses taken by other nations in order to demonstrate what the government could implement moving forward. A statistical approach will also be taken by analyzing Nepal's 2016 National Demographic and Health Survey dataset, which is available from the same source and through the same process as the aforementioned Health Facility Survey (Ministry of Health, 2017). Such an analysis will involve utilizing R to determine whether there is a correlation between household distance from a health facility and several different outcomes, such as if the child received deworming and vitamin A supplements, if they have diseases such as anemia, and if they experienced stunting. Lastly, R will also be used to measure the impact of several government-supported policies: antenatal care; postnatal care; counseling on maternal, infant, and young child nutrition; and sessions that teach mothers how to monitor child growth. Tests will be conducted on the correlation between those independent variables and the following dependent variables: child nutrition, child weight, the presence of stunting, if the child is receiving the Minimum Acceptable Diet, if the child is vaccinated in 12-23 months after delivery, if the child has been dewormed, and if the child has been given Vitamin A supplementation. This will determine the effectiveness of those policies in improving health outcomes and building trust with the health system.

Discussion, This section should encompass a reasonable explanation for why your results are what they are (in this case, expected results). There should be a brief data interpretation plan detailing methods for data analysis, including any planned graphical or statistical approaches, such as formulas being used. You may include graphs and formulas. Mention the importance/implications of your findings and how they can be used in future studies. Include limitations and even possibly risks within your study (this allows for researchers to pick up from your research, as they are able to identify a gap within yours). (200-300 Words)

For Phase 1, we expect that the hospitals in lower-income districts likely provide significantly fewer services and will be significantly less equipped than those in higher-income districts due to inequities in funding. The data for this will be analyzed by conducting a chi-square goodness of fit test using R to determine whether the income bracket of the hospital district has a statistically significant relationship with the various measures of quality of the hospital's child healthcare services. If the p-value is under 0.05, the relationship can be described as statistically significant. Additionally, Tableau will be used to create a color-coded visualization of the quality of every district's hospital child healthcare services. This will allow for pinpointing the districts that have fallen behind. For Phase 2, we expect that the child and adolescent-focused mental health unit at Kanti Hospital will offer more service options, treat patients with more diverse types of mental health issues, and have a quicker average recovery time than Patan Hospital as it is far more specialized and can better meet the needs of youth with mental health issues. Bar graphs and tables can be used to depict the differences between the two hospitals. More importantly, however, we anticipate that we will receive valuable information on the specific strengths and weaknesses of existing youth mental health treatment, allowing us to provide KIOCH with great insight on how to better support this often overlooked area. For Phase 3, we expect that households living further from health facilities

will have children with lower health outcomes and will be less likely to have had their children receive many crucial services such as deworming and vitamin supplementation due to the unavailability of such options in nearby areas. Because the distance variable is a categorical one in the NDHS dataset, a one-way ANOVA test will be used to determine whether there is a correlation, and if the p-value is under 0.05, the relationship can be once again described as statistically significant. Additionally, we expect women who receive antenatal care, postnatal care, nutrition counseling, and/or sessions regarding growth monitoring to permit their children to receive beneficial services like immunization, to provide more acceptable diets to their children, to later seek treatments when their children have disease warning signs, and to have children with more positive health outcomes. The data will be analyzed using several logistic regressions; independent variables with p-values less than 0.05 can be accepted as statistically significant. The significance levels of the different variables can be included in a bar graph as well for visual comparison. For all three phases, the literature reviews will be expected to produce case studies of innovative child health services and policies worldwide. Because our main focus is to support KIOCH, our findings will help them identify any new facilities, services, or treatments that can be incorporated in their project to better support child health and youth mental health. Moreover, our findings will allow the government to understand the current gaps in child healthcare policy and craft more informed solutions based on globally successful methods. In terms of limitations, it is true that much of our data will rely on surveys that we or other groups have conducted. Respondents may not give true information and participant bias may occur. Literature reviews of international policies and services may prove difficult to apply to the specific situation in Nepal due to concerns such as cost. Nevertheless, we hope that this research will provide the foundation for future investigation, policies, and services that can one day create a better future for each and every Nepali child.

References, outlining all sources used with internal citations using the APA format. Refer to the Purdue Owl example citations if necessary. Participants are encouraged to seek all forms of resources, such as journals, textbooks, and mentors in the field. (At least 5 references)

Children of Nepal - Realizing Children's Rights in Nepal. Humanium. (2019, April 3). <https://www.humanium.org/en/nepal/>.

Nepal needs an innovative approach to its health care system. Kathmandu Institute of Child Health. (2021). <https://kioch.org.np/innovative>.

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Ministry of Health, Nepal; New ERA, Nepal; Nepal Health Sector Support Program (NHSSP); and ICF. (2017) Nepal Health Facility Survey 2015, Kathmandu, Nepal: Ministry of Health, Nepal.

Ministry of Health, Nepal; New ERA; and ICF. (2017) Nepal Demographic and Health Survey 2016, Kathmandu, Nepal: Ministry of Health, Nepal.

Ministry of Health and Population Nepal, Partnership for Maternal, Newborn & Child Health, WHO, World Bank and Alliance for Health Policy and Systems Research. (2014) *Success factors for women's and children's health*

Worldometer. (2021). *Nepal Population (LIVE).* Worldometer. <https://www.worldometers.info/world-population/nepal-population/>.

