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Exploring the impact of mental health on infant growth in urban West Bengal, India :: a retrospective cohort study exploring the association of mental health status of parents with a deterioration in weight for age z score (as an indicator of under-nutrition) of children under the age of 4 in a cohort living in an impoverished urban community in West Bengal, India

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ABSTRACT

Underweight malnutrition is considered the underlying contributing factor in 45% of all child deaths worldwide. Employing a retrospective cohort study design, we explored the association of mental illness symptoms of parents with a deterioration in weight for age z score (as an indicator of under-nutrition) of their children under the age of 4 in a cohort living in an impoverished urban community in West Bengal, India. Results, inconsistent with other studies, indicate that the association is not statistically significant among the studied population. The likely explanation is the intensive, multi-faceted nutrition interventions of Calcutta Kids, an organization working for many years with this population. Mothers with suicidal ideation, however, are observed to be three times more likely to have a malnourished child than mothers who do not have suicidal ideation. It is recommended that Calcutta Kids introduce maternal suicide assessments and safety net systems for pregnant women and mother beneficiaries.

EXPLORING THE IMPACT OF PARENTAL MENTAL HEALTH ON INFANT GROWTH IN URBAN WEST BENGAL, INDIA

A retrospective cohort study exploring the association of mental health status of parents with a deterioration in weight for age z score (as an indicator of under-nutrition) of children under the age of 4 in a cohort living in an impoverished urban community in West Bengal, India. This project was submitted in partial fulfillment of the requirements for the degree of Master of Social Work.

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I. INTRODUCTION

Despite recent improvements in the reduction of childhood malnutrition and preventable childhood deaths in developing countries, underweight malnutrition remains a significant challenge and is considered the underlying contributing factor in 45% of all child deaths (World Health Organization, 2016). UNICEF's conceptual framework of the causes of child malnutrition (Fig 1) provides a comprehensive, multifaceted and multi-determinant understanding of the causes of child malnutrition. The model is broken down into four levels with the "outcome" of child malnutrition, death and disability at the top. Below the "outcome" are the "immediate causes" which include inadequate dietary intake and disease; below the "immediate causes" are the "underlying causes at the household level" which include insufficient food access, inadequate maternal and child care, and poor water/sanitation and inadequate health services. At the bottom, and affecting these "underlying causes" are the "basic causes at the societal level." (UNICEF, 1990).

Most of my professional life until now has been spent working to improve the nutritional status among children aged 0-3 in the public health sphere in India through an organization I founded based in an impoverished urban residential community outside of Kolkata India, called Calcutta Kids (Box 1). In our work, we've focused primarily on the "immediate causes" of malnutrition as defined by UNICEF - "inadequate dietary intake" and "disease". With this approach we were able to reduce severe underweight malnutrition (see Definition of Key Terms below) among the Calcutta Kids registered children in our catchment area (n=500 during the

years 2005-2009) from 16% to 12.3%. To further reduce rates of severe malnutrition, Calcutta Kids expanded its attention to the next level of causality in the framework – the "underlying causes at the household/family level". For severely malnourished children, we discovered both immediate and longer-term solutions have to be provided to address the "insufficient access to food" and "poor water/sanitation and inadequate health services" determinants. These solutions have included nutrition/food supplementation at the home/institutional level; increased access to clean drinking water; and healthcare access in the form of subsidized insurance.

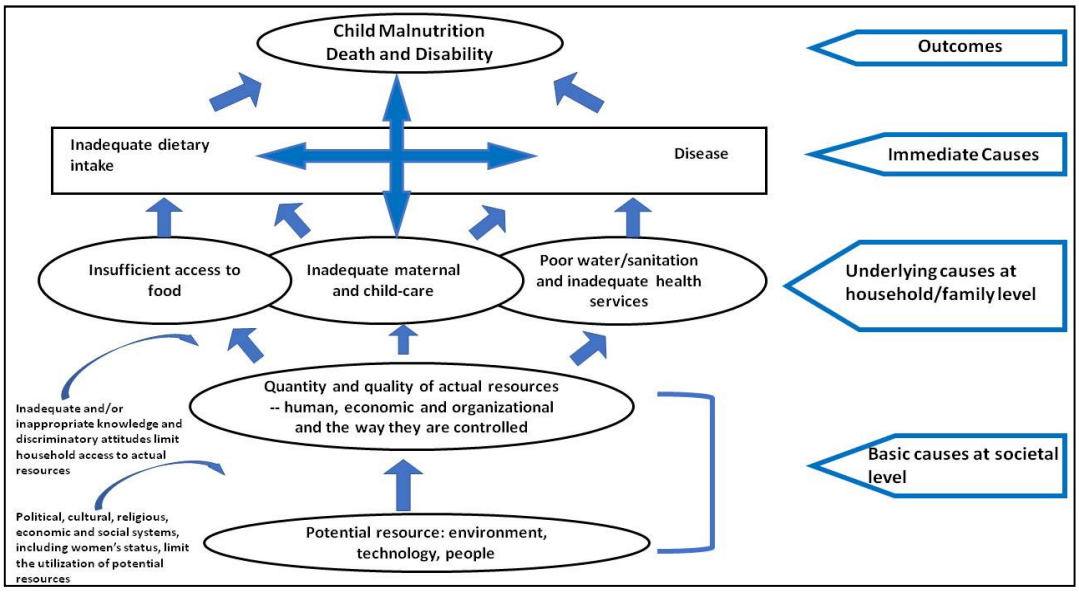

Figure 1: Conceptual Framework of Child Malnutrition (UNICEF, 1990)

Calcutta Kids Mission Statement: Calcutta Kids is committed to providing the crucial health and nutrition services during the first 1000 days of life to prevent irreversible damage to children's long-term health. This is achieved by empowering pregnant women and mothers in the slums of Kolkata, India to be the primary agents responsible for that outcome. Our goal is to provide services which positively impact children's growth and development which in turn will help them to break out of the cycle of poverty. Our signature program is the Maternal and Young Child Health Initiative (MYCHI) and has the following **specific objectives**: 1) reduce maternal morbidity and mortality; 2) reduce child morbidity and mortality; 3) improve birth weights/reduce low birth weights; and 4) ensure that children aged 0-3 years grow normally according to WHO growth standards.

Box 1: Calcutta Kids Mission Statement and MYCHI Objectives, (Calcutta Kids, 2017).

The inclusion of these approaches proved to be yet more successful, reducing severe malnutrition among the Calcutta Kids registered children in our catchment area from (n=500 during the years 2009-2012) from 12.3% to 3.3%. Carrying out interviews with the families of the 3.3% of children who did not improve (n=15 out of 500 registered children aged 0-3 years) – confirmed that these children were responding neither to the interventions we had in place addressing the "immediate causes" nor those addressing the "underlying causes." We found instead that, without exception, all of these children come from families experiencing particular challenges at home - challenges which were not responsive to our existing interventions. And notably among these challenges were mental illness, physical abuse/domestic violence, and substance abuse among their caretakers.

Looking again at the UNICEF conceptual framework, we saw that these challenges affected "Inadequate maternal and child-care," one of the underlying determinants of malnutrition, and accordingly, one to which Calcutta Kids now needs to give serious attention. Notable in the framework is the bi-directional direct link between the "underlying causes at household/family level" of "maternal and child care" and the outcome of "child malnutrition, death, and disability" (UNICEF, 1990).

This study is the first part of a projected four-part project encompassing 1) research to quantify the extent of the need for an intervention to address "inadequate maternal and child care"; 2) a community-based intervention-design process; 3) the implementation of the intervention; and 4) an evaluation of the effects of the intervention on child malnutrition rates.

The caring determinants of child under-nutrition include nourishment - most appropriately in the form of breastfeeding -, attending to the cleaning needs of the child after

urination and defecation, bathing, protection from the elements, keeping the child warm, physical touch, psychosocial stimulation, and attachment. Because in much of the developing world, the caretaking responsibilities of young children remains in the hands of women, the language in the conceptual framework and most of the literature refers to maternal care. Accordingly, probing the mental health determinant of caring, the research usually refers to maternal mental health as opposed to, for example, parental mental health.

The World Health Organization defines maternal mental health as "a state of well-being in which a mother realizes her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her community" (Engle, 2009). It is useful here to note Rahman's (2008) critique that mental health is not the same as the absence of mental illness, but rather that it reflects a capacity to adapt and cope. If a mother is unable to "adapt and cope" due to a lack of mental well-being, how can she respond to the demands of a young child? Without a caring component of intervention for mothers who lack mental well-being, how can they be expected to fulfill their responsibilities to their children which include, for example, ensuring that their child consumes enough calories even when the child is cranky, screaming, crying, and doesn't want to eat anymore?

The topic of this research, therefore, is an examination of the relationship between parental mental health and the quality of maternal care giving. The study examines the hypothesis that poor parental mental health (independent variable), through the pathway of inadequate maternal care giving, negatively impacts early child nutritional status (dependent variable) with other potential determinants held constant. Additionally, the study examines parental mental illness rather than just maternal mental illness because of the absence of paternal care in the literature - including that of the UNICEF conceptual framework (UNICEF, 1990).

The specific research question is: do deficits in parental mental health negatively impact early child nutritional status in a small impoverished urban residential community in West Bengal, India?

Another reason for exploring parental (combined, but also disaggregated by maternal and paternal) mental illness is to examine a secondary question – namely the effect of substance abuse (most commonly occurring among men in the aforementioned urban community). Is there a pathway of negative impact between a father's substance abuse on a mother's care-giving ability which then impacts their child's growth?

It is notable that the language used in the hypothesis refers to "mental well-being" rather than "mental health". While the chosen words do not exactly convey the intent of the research (together with the community, we will eventually find words in Hindi or Bengali), what I mean to do is avoid using traditional psychiatric language. The reason for this is because of the projected 4-part project which will rely importantly on community participation. I want to use invitational language to imply the aforementioned *possibility for individual improvement in the ability to adapt and cope*. Such language will likely increase the chances that community members will participate in an intervention rather than staying away due to fear of stigmatization. The best mental health interventions address the need for positive human interactions, shared vulnerability, coping strategies, perspective, and psycho education. Accordingly, our desire is that none of these be stigmatized, and that the intervention ultimately be packaged with that understanding.

It is crucial that this lens - which speaks to possibility and resilience - frame the study and the eventual intervention. Such a lens will widen the focus for potential community-based

interventions to be of value to the entire population - not only addressing “inadequate maternal and child care” (UNICEF, 1990) but also, for example, substance abuse and domestic violence. The term "mental illness" is stigmatized worldwide. In India, the term usually refers to psychosis and schizophrenia rather than applying to the many people who might benefit from a strength-based, resilience-building intervention.

While the words are used in this study, "mental illness," as indicated, does not correctly capture what we are seeking to study. We are interested, instead, in what Rahman (2008) refers to as parents” ability to “adapt and cope”. If a parent is unable to adapt and cope, this may be circumstantial as opposed to the parent having a more traditionally-defined "mental illness”. Future phases of this study will develop a word or phrase to attend to this sensitivity, one which will encompass the “inability to adapt and cope.” In so doing we may be better positioned to address the core question and identify parents *not* who are "mentally ill" but rather are having challenges in their ability to adapt and cope.

While there is substantial evidence to suggest that maternal mental illness negatively impacts child growth (Harpham, 2005; Rahman 2004; Rahman 2004; Santos 2011), it appears necessary to test this phenomenon in the community in which an intervention may be implemented. The most obvious reason for this is to be sure - prior to any intervention - that the social phenomenon under review indeed exists in the community. Just as important however, is to assure that community itself has the opportunity to examine this social phenomenon – assuming that it exists, and then has the opportunity be actively involved in the solution(s).

As this research is part of a larger project with a projected four-part implementation (in which each prior implementation informs the next) and because the literature suggests the

likelihood that the hypothesis will be correct, it was considered appropriate to anticipate a response and basic implementation plan for the second part of the project: If indeed the study reveals a correlation linking parental mental illness to poor child growth in the community, Calcutta Kids will follow its tradition of engaging the community in the creation and partnered implementation of an intervention. By recognizing and then *owning* the social phenomenon, the community is more likely to commit itself and engage fully in an intervention, thus ensuring a culturally appropriate model to improve mental health, and involving stakeholders throughout the community. Two of the unique aspects of the undertaking, as indicated, would be (a) the inclusion of co-parents/fathers, and (b) a broader definition of mental illness to include substance abuse - a social ill which plagues this community and India more generally (Neufield, 2005).

Relevance to Social Work

While a public health commitment to mental health has been minimal in low and middle income countries to date (Engle 2009), mounting evidence of the impact of mental health on physical health is likely, over time, to lead to a more seamless integration of physical and behavioral health service provision. Due to its impact on children, the obvious place for such incorporation is in the M of MCH (Maternal and Child Health). Not only is there mounting evidence of the impact of maternal mental illness on child physical health outcomes, but also on child mental health outcomes (Herba et al, 2016). Herba et al cite a World Health Survey indicating that childhood adversity and later common mental disorders are most strongly predicted by maladaptive family functioning including parental mental health disorders (Herba et al, 2016 p. 896.) The relevance to social work of this study is noteworthy because of the mental illness prevention possibilities: by effectively treating parents and encouraging adaptive family function capabilities, both physical and mental ill-being of the child may be prevented.

Furthermore, this study creates an opportunity to bring forward the possibility of valuable conversations.

Additionally, this research has the potential to illuminate predictive observable signs and symptoms of parents who may have children who will struggle with malnutrition. This in itself can signal an early intervention at both the parental and the child level. The implication with regard to mental health therefore is that children in such instances need not be treated within a silo that is independent of their parents; that through an intervention aimed at improved child healthcare, both parental mental illness as well as improved maternal healthcare can be addressed as bi-products of such a child-focused intervention. For example, through a pathway of poor pregnancy care, children are often born with low birthweights. This is an illuminative, predictive, and observable indicator of inadequate pregnancy care, one that carries with it an inherently higher risk of malnutrition – but one that can be addressed with early intervention. If it is observed that parental mental illness negatively impacts child growth, then by addressing parental mental illness, we move outside of the child health silo into the possibility of more holistic approaches to impact child growth.

This project has significant importance for social work because it addresses 1) mental illness prevention, 2) mental illness treatment, 3) social justice (addressing and improving services for underserved populations i.e. women and individuals with mental illnesses, 4) cognitive development (malnourished children are cognitively disadvantaged in comparison to their well-nourished counterparts), and 5) because of the long term plans for this project which will encourage community mobilization.

As previously mentioned, the long(er) term plans for this undertaking include a community-driven process of designing and then implementing a social work/mental illness intervention to address the "care" component of the underlying causes of malnutrition. This study is the next logical step for Calcutta Kids in addressing child malnutrition. We need to know if the social phenomenon of parental mental illness impacting child nutrition exists in the Calcutta Kids intervention area. If a correlation is found and the community determines that an intervention is warranted, then, in a participatory fashion, the community will help to design and implement such an intervention. A bottom-up community approach to design and develop a culturally appropriate intervention is fully consistent with social work values and the discipline's explicit commitment to social justice. Not only do the long-term plans for this undertaking suggest the development of new interventions, these plans also facilitate the process of community innovation with regard to the development of those new interventions.

Definition of key terms

For the purposes of this paper, *malnutrition* (inclusive of moderate and severe malnutrition) is defined as a weight for age body weight of less than -2 standard deviations from the mean of the World Health Organization's Multicentre Growth Reference Study (MGRS). The MGRS study was undertaken between 1997 and 2003 to generate growth curves for assessing the growth and development of infants and young children around the world. The study collected growth data from 8500 children from different backgrounds in Brazil, Ghana, India, Norway, Oman and the USA (Bhan, 2004). The reason that the weight-for-age reference definition of malnutrition has been chosen as the dependent variable (as opposed to weight-for-height, or height-for-age) in this study is because this has been the reference definition used to identify families for whom the Calcutta Kids' public health

interventions were not working. (Note: references to severe malnutrition in this paper refer to a weight-for-age body weight less than or equal to-3 standard deviations from the aforementioned WHO mean.)

Mental illness is difficult to define. This study favors the notion that mental health lies on a continuum; that Harry Stack Sullivan said it best when he wrote "We are all much more simply human than otherwise, be we happy and successful, contented and detached, miserable and mentally disordered, or whatever" (Sullivan, 1947). Symptoms of mental distress, however, are easier to define. This study employs the use of World Health Organization's Self Reporting Questionnaire 20 (SRQ-20) which asks 20 “yes or no” questions related to symptoms known to exist in conditions of neurosis. This survey tool has been tested and validated internationally and has been used extensively in Pakistan and India (Harpham, 2005; Rahman 2004; Rahman 2004). Using the guidelines suggested by the writers of the SRQ-20 (WHO, 1994) as well as those employed in similar studies (Harpham, 2005; Rahman 2004; Rahman 2004) mental illness is imperfectly described as being present when someone answers yes to at least 10 of the 20 questions.

The SRQ-20 assesses suicidal ideation by asking "Has the thought of ending your life been on your mind?" This question, in which a defined time frame is noticeably absent, provides the opportunity for 1) an assessment of the severity of mental distress and 2) the opportunity for an immediate implementation of service provision. This opportunity as well as a protocol for service provision is addressed at length in the methodology section of this paper.

As is the case with mental illness, substance abuse is difficult to define. This study employs the use of another World Health Organization screening test which has been validated (Humeniuk et al, 2008) and translated into Hindi called ASSIST 3.0 - Alcohol, Smoking, Substance Involvement Screening Test (WHO, 2010). ASSIST 3.0 asks a series of questions, gives a numerical value for each answer, and then based on the total numbers added makes a recommendation for treatment. As per the guidelines of ASSIST 3.0, substance use treatment is suggested for users of tobacco and cannabis (and all other substances with the exception of alcohol) with scores of at least 4; substance use treatment is suggested for users of alcohol with scores of at least 11. Again, these definitions are imperfect, but they allow for quantitative measurements based on substance use within the previous 3 months.

For the purposes of this study, mental illness refers to someone with ten or more symptoms on the SRQ-20 related to neurosis, and substance abuse refers to a World Health Organization recommendation of treatment for tobacco and cannabis users with an ASSIST score of at least 4, and alcohol users with an ASSIST score of at least 11.

II. LITERATURE REVIEW

This literature review is divided into two independent sections. The first relates to child malnutrition and mental illness; the second relates to suicide and suicidal ideation.

Child malnutrition and parental mental illness

This study employs the use of UNICEF's (1990) conceptual framework of child malnutrition (Figure 1), discussed earlier. The framework is useful in understanding the complexity of malnutrition and the different levels at which interventions are possible. It also specifically highlights the area of interest of this research as an underlying cause of malnutrition at the household and family level - care of mother and child.

The framework is pivotal to this research as it conveys the complexity of malnutrition. Yet its very complexity is one of the criticisms of the model. Gillespie et al (2003) argue that the conceptual framework has the potential to be misused; that it can invoke malnutrition as too rooted in societal causes for one sector to make a difference (p.19). Others, however, have made the case that 1) addressing only one of the determinants will likely have limited impact and 2) addressing all of them in vulnerable areas can have synergistic effects and result in major decreases in under-nutrition (Levinson & Balarajan, 2013). A further critique, suggested by this proposal, addresses the limited attention given to the inadequate maternal and child care cause of malnutrition and the absence of any mention of mental health. The original framework (UNICEF

1990, p.33) describes the connection between inadequate care and malnutrition in the following way.

> The care of the child is inextricably linked with the situation of the household and the situation of women. A mother's knowledge about child care and her access to and control of resources determine, to a large extent, the care she can provide for her child. The lack of resources, in the form of time, knowledge and income, together with the subordination of women in many societies, constitute the underlying and basic causes of malnutrition. Many of the abovementioned actions address those causes. The establishment of community-based child-care arrangements, income-generating activities for women and the training and education of families should all aim to give women the skills and knowledge required to create better opportunities for improved care for themselves and their children.

Perhaps the absence of mental illness in the 1990 framework can be explained by the fact that most of the research published about the relationship between maternal mental illness and child malnutrition has been published post 1990 (Harpham, 2005; Rahman 2004; Rahman 2004; Santos 2011). Alternatively, those developing the original framework might have argued that community-based institutions could themselves create opportunities for improved maternal care, including improvements generated by addressing mental illness.

There is a substantial body of literature examining the relationship between maternal mental illness and child malnutrition and numerous studies which test similar hypotheses (Harpham, 2005; Rahman 2004; Rahman 2004; Santos 2011). All of these studies use WHO Anthropometric Standards as reference data for child growth. Harpham et al, (2005) conducted a cross sectional survey among 2000 mothers and their children aged 6-18 months in four countries - India, Peru, Vietnam, and Ethiopia. The authors found in both India and Vietnam a significant relationship between poor maternal mental health and poor child nutritional status. In Peru and Ethiopia, however, the relationship was not found to be statistically significant. Rahman A., Iqbal, Z et al (2004) conducted a cohort study examining the impact of maternal

depression on infant nutritional status and illness in Pakistan. They found that infants who had depressed mothers showed more growth retardation than the control group at all time points. At 6 months of age, the relative risk for underweight malnutrition was 4.0 (95% CI. 2.1-4.4.). In a second study in Pakistan (Rahman, et al, 2004) the authors used a case-control model in which they examined mothers' mental health and infant growth. They found that maternal mental distress was associated with under nutrition in infants by a factor of nearly 4 (OR 3.91, 95% CI 1.95-7.86). Santos et al (2011) conducted a case-control study examining maternal CMD's (Common Mental Disorders) and malnutrition in children in Brazil. They found that the children of mothers with CMD's had double the risk of malnutrition (OR 2.05, 95% CI 1.1-3.78.).

The array of study designs used and countries studied to examine the same question is suggestive that this relationship is an established social phenomenon. What is concerning about these studies is that while a relationship between maternal mental health and child malnutrition has usually been found, strategies to counteract the relationship are few and tested interventions are even fewer. Additionally concerning is that while in many developing countries, women remain the primary caretakers of young children, the impact of paternal mental health has not been explored. It seems plausible that paternal mental health or addiction might play a significant role in the ability of a mother to care for her child appropriately.

Tripathy et al (2010) examined the impact of community mobilization on birth outcomes in India through a cluster-randomized controlled trial over 3 years. They found that neonatal mortality rates were 32% lower in intervention areas (OR 0.68 95%CI 0.59-0.78). They also noted a reduction in maternal moderate depression by 57%. What is particularly noteworthy about this study is that it introduces a culturally appropriate form of mental health treatment that could be integrated into community-based programs, and which has been effective in reducing

maternal depression and improving infant survival rates. The intervention did not use western means of addressing mental illness. Instead, it convened monthly groups to support participatory action and learning for women and facilitated development and implementation of strategies to address maternal and newborn health problems (Tripathy et al, 2010 p. 1182).

In examining the policy implications of maternal mental health, Engle (2009 p.963S) comments that "despite mounting evidence of the impact of maternal mental health on women and children, prevention and treatment have been slow to enter into maternal and child health programs." While the literature above does not explicitly discuss the reasons for this slow integration, one reason is surely the cost and resource mobilization involved in one-on-one service provision compared with. broad-based public health approaches. Another reason is the well established underlying sexism and the lower status of women worldwide. The social implications of gender inequality in South Asia, particularly its impact on child health is explored extensively by Ramalingaswami et al (1996) in their “Asian Enigma” commentary.

While biases and assumptions make their way into all areas of research, the lack of apparent and oppressive biases identified in the aforementioned literature is noteworthy. The likely exception is that groups within the study populations have been unrepresented or underrepresented because of poor access to health services – meaning that they also are poorly represented on household lists on which the randomization is based. These problems, however, are unlikely to be major given that the studies themselves are oriented toward solving problems of generally oppressed populations - women and young children in low income countries.

Suicide

Until the Patel et al (2012) seminal nationally representative study estimating suicide

mortality in India, there was a wide range of estimates which put the annual loss of life by suicide in India post 2010 somewhere between 123,000 (Mayer, 2011) and the World Health Organization's higher estimate of 170,000. The Indian National Crime Records Bureau (NCRB), using police records put the number at 135,000. The nationally representative study was critically needed because of complexities surrounding underestimation and misclassification issues based on the fact that, at the time of the paper's publication, suicide was a criminal offense under Section 309 of the Indian Penal Code stating that "Whoever attempts to commit suicide and does any act towards the commission of such an offense shall be punished with simple imprisonment for a term which may extend to one year or with a fine or with both." This was changed in 2014, but up until that time there was good reason for suicides to be concealed due to fear of possible police interference and family stigma (Patel et al, 2012, Radhakrishnan and Andrade 2012). Underestimation in suicide deaths was believed to range from between 36% to as much as 60% in the states of Uttar Pradesh and Bihar. Under a grant from the National Institute of Health, Patel et al (2012) estimate that in the year 2010, suicide claimed the lives of more than 187,000 persons. Said another way, every three minutes, someone in India commits suicide.

The sex ratio in this number is useful in considering the uniqueness of the Indian situation. Patel et al (2012) compares the general male-to-female suicide death ratios in high-income countries of three to one to that of India which it is about one and a half to one. Among Indian women 15 years and older, the suicide rate is more than two and a half times greater than women in high income countries.

Among Indian women between the ages of 15 and 49, suicide is the most common cause of death. Between 1990 and 2010, suicide among women in that age group rose 126 per cent

replacing maternal mortality as the most common cause (Kay, 2013). Mayer (2011, 2016a, 2016b) tries to make sense of this increase in suicides among this age group by focusing on "housewife" suicides and points to an intersection between gender politics - the continued marginalization and invisibility of female suffering - and development. As human development indicators improve for women - employment, literacy, civic involvement - so does suicide. Mayer writes:

> Despite the social progress that has seen a rise in female literacy and a fall in birth rates, young women are still at the mercy of India's patriarchal culture... The sense of powerlessness appears to be especially acute at those ages when there are intense social expectations that they will make suitable marriages and have children, especially sons. We speculate that this conflict may also have manifested as an increase in self-harm by frustrated young females trapped between the conservative past and the promise of a liberated future. (Mayer 2011 p106)

Suicide is an issue from which the media and public policy generally has shied away (Mayer, 2016a, Patel, 2012, Vijaykumar, 2007). Farmer suicides, however, have caught the attention of the Indian press and the public because, more often than not, these deaths are linked to Indian public policy discussions related to post-1991 economic reforms and point directly to a narrative of economic distress (Mayer 2016a). In an article with the subtitle: "Desperate Housewives, Despairing Farmers", Mayer compares media coverage and raw mortality numbers to provide a clearer understanding of suicide in India. For example, in 2014, there were 5,650 recorded farmer suicides and 20,148 housewife suicides. Mayer estimates that even though there are 250% more housewife suicides than farmer suicides, media coverage may lead the public to think that housewife suicides are only a fraction of that of farmer suicides. I propose that the disconnect between the raw mortality numbers related to housewife and farmer suicides and the overwhelming emphasis on farmer suicides in the media may point to a social comfort in speaking about symptoms related to the economy (the narrative about farmer suicides relates to

financial pressures) and a social discomfort in speaking about the effects of gender inequality which plagues India.

Why are housewife suicides so high? Mayer states his hypothesis that "The very brief answer which I propose is that it reflects the conflicted roles in which women find themselves as Indian society undergoes social change" (Mayer, 2016a). As a means of probing into Indian society, Mayer (2016a, 2016b) explores marriage and writes about how the patterns of suicide in India are different to those seen in high income countries; that generalizations thought to be sociological gospel must be further interrogated in the Indian context. He points to the example that marriage is a protective factor against suicide in most places in the world, yet in India this appears not to be the case. In 2014, 68% of male suicides were among married men and 64% of female suicides were among married women. Of this Mayer writes, "Let me simply state my argument that as Indian marriages change from those arranged by parents and based on more formalized relationships between husband and wife, to those which are increasingly like what students of marriage in 18th century Europe have termed "companionate marriage," a small fraction of married women find themselves unable to cope with the stresses which arise" (Mayer 2016a). Other writers speak to the married Indian woman's increased suicide risk and point to dowry, domestic violence, divorce, cancellation of arranged marriage, illegitimate pregnancy, extra-marital affairs, and the social and family pressure (often financially motivated) which cage women in unhealthy marriages (Vijaykumar, 2017, Radhakrishnan and Andrade 2012, NCRB, 2015). Of divorced women, the suicide rate is 126/100,000; of divorced men, the suicide rate is 347/100,000 (Mayer, 2016b).

But the impact of marriage on suicide appears to be impacted by region, development status, and gender. A 2002 study examining India as a whole showed that, for Indian men, the

risk of suicide increases with marriage, and among Indian women, the risk is reduced by nearly half (Ziaian and Mayer, 2002). In the northern, more impoverished states, sometimes referred to as the BIMARU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh - the English translation of the Hindi word *bimar* is "sick") the overall suicide rates are low; marriage is a protective factor for women; and the larger the family size, the lower the risk of suicide. In those same BIMARU states, as women's education improves, so does suicide risk. In southern India, as human development indicators increase at a faster pace, so do suicide rates; in southern states family size tends to be smaller; and risk of suicide for married women is higher than that of unmarried women (Mayer, 2016b). Mayer (2016b) suggests

> "a central explanatory factor is the importance of changing expectations concerning social roles, especially in marriage. India's current generation is vastly better educated than were their parents. With education come changing values and ways of living. In other words, cultural change is an ineluctable aspect of social and economic change."

In the north, illiteracy among women remains high as do traditional expectations about women's social roles; independent decisions about their lives is limited. This is juxtaposed with the south in which female literacy is advanced as is access to mass media (Mayer, 2016b). In their 2012 nationally representative survey, Patel et al report that "the southern states have nearly a ten times greater age-standardized suicide death rate than some of the northern states." The authors' data show that even after adjusting for education, that difference remains.

Deeply imbedded into most aspects of Indian culture is religion. While marriage appears sometimes to be protective and sometimes a risk against suicide, religion and belief in God is consistently a protective factor against suicide in India. Vijaykumar (2007) points to several smaller studies in the Southern part of India which show high odds ratios of protection.

Vijaykumar (2002) published a study in Chennai which showing an odds ratio of 6.8 (CI 2.88-19.69) of increased risk for suicide among those who did not believe in God. In her study, she found that 11 percent had lost their faith within three months prior to suicide. A case-control study in Bangalore by Gururaj et al (2004) found that a lack of religious belief was a risk factor for suicide with an OR 19.18 (CI 4.17-10.37).

Up until now, this review has focused on literature related to completed suicides. Let us move to literature which speaks specifically to suicidal ideation. The WHO SUPRE - MISS community survey examined population-wide suicidal behavior in Brazil, China, Estonia, India, Iran, South Africa, Sri Lanka, and Vietnam. As would be expected, there was large variation in results. For suicidal ideation among these populations, the range was between 2.6-25.4%; for those who had actual plans of suicide, the range was between 1.1-15.6%; and for those who attempted suicide, the range was between 0.4-4.2% (Bertolote et al, 2005). Specific to India, there are numerous small studies which examine suicidal ideation among specific populations. Findings from these studies indicate that suicidal ideation rates and attempts range widely, generally between 5-25% and 4-13% respectively. A paper by Etzersdorfer et al (1998) studied medical school students in Chennai and found that previous suicidal ideation rates were 16.8% and the suicide attempt rate was 5.9%. A school-based study of 1205 students between the ages of 12 and 19 in Delhi report lifetime and last year suicidal ideation rates of 21.7% and 11.7% respectively; and lifetime and last year suicide attempts rates of 8% and 3.5% respectively (Sidhartha and Jena, 2006). Another paper examined results from 1817 surveys filled out by college students in Ahmedabad (aged 18-24) and reported a lifetime suicidal ideation rate of 11.7% and lifetime suicide attempts rate of 4% (Nath et al, 2012). A study by Jonas et al, (2014) which studied 4711 subjects in Central India measured suicidal ideation (within the previous six

months) at a rate of 5.1% and suicide attempts at a rate of 4.2%. In a Bangalore-based study with 1087 young adults between the ages of 16 and 18, 25.4% reported suicidal ideation within the last 3 months; the lifetime suicide attempt rate was 12.9%. In Kar and Thirthalli's (2015) cross-sectional study, they survey 394 participants at four tertiary level medical centers in India. They note that 44.2% of participants have at one time or another in their lifetime felt that life was not worth living; they note that 27% have a current wish to die; 25% have suicidal ideas; 12% have made suicidal plans, and 7% have attempted suicide. These authors note that 66% believe that suicide is a sin while 10% believe that in certain situations their religion would allow suicide. The rates in Kar and Thirthalli's study may be high given that the sample is made up of people currently suffering in some form or another given that they are in a hospital setting.

Focusing on suicidal ideation among young women in India, Pillai et al (2008) study youth in Goa and found that female suicidal ideation was associated with independent decision making, pre-marital sex, rural residence, common mental disorders, and domestic violence. This leads the authors to make a similar observation to what Mayer (2011) makes about the vulnerability of young women in challenging patriarchal traditions.

Much like malnutrition, the reasons for suicide ideation and attempts are multifaceted and multideterminant. Perhaps unlike malnutrition, however, the reasons for suicide ideation and attempts are also deeply personal and far too often not spoken about due to stigma and shame. Scholars are clear, however, in their shared call for improved public education, increased awareness, improved support systems and a national suicide prevention policy (Kar and Thirthalli, 2015; Mayer 2016a & 2016b; Patel et al, 2012; Vijaykumar 2007). This is reinforced by Indian psychiatrists and NGO's working in the mental health field. Researchers point to a lack of evidence-based suicide prevention programs specific to Indian culture (Mayer 2016a, Patel et

al 2012, Radhakrishnan and Andrade 2012, Pillai, Andrews and Patel 2008, Vijaykumar 2007). Vijaykumar (2007) juxtaposes Indian views on suicide and a perception that it cannot be prevented - on the one hand, a belief that suicide is a personal matter to be decided upon individually; on the other hand, a belief that it cannot be prevented due to the social and environmental factors over which individuals have little control. She adds her voice to the discussion with a belief that there is usually an appropriate alternative resolution; that "suicide is often a permanent solution to a temporary problem." She goes on to endorse Mrazek and Haggerty's (1994) framework of a mental health interventions based on a spectrum with three primary levels: prevention, treatment, and continuing care (in which prevention and treatment often overlap in the form of early intervention). The endorsement of the framework suggests that the problem need not be so overwhelming as to lead to apathy; that rather suicide prevention can be addressed systematically with inputs at varying input points upon the spectrum at the levels of 1) the population level; 2) the level of subgroups at risk but not yet displaying concerning behavior, and 3) the level at which indicated interventions are necessary for people exhibiting suicidal thoughts/behavior.

Patel (2012) suggests that until community mental health services improve for people with mental health conditions associated with suicide, the government of India should reduce binge alcohol drinking through regulations of higher alcohol taxation; introduce mental health services into primary care; and improve education around and reduce access to organophosphate pesticides - ingesting such poison is the most common method of completing suicide by almost half of both male and female suicides.

III. METHODOLOGY

Overview

Employing a retrospective cohort study design, we explored the association of mental health status of mothers and fathers with a deterioration in weight for age z score (as an indicator of under-nutrition) of children under the age of 4 in a cohort living in an urban slum in West Bengal, India. The primary endpoint for this analysis was severe malnutrition (WAZ<-3SD) and/or an average negative change of at least 10 percent per month in WAZ score in children under the age of four over a period of one year in 2016. We used frequencies to describe the outcome in the population. We also compared the proportion of various factors in those children who reported the outcome as compared to those who did not. We investigated the association of mothers and fathers' SRQ-20 (WHO, 1994) and ASSIST (WHO, 2010) scores (survey instruments created by the World Health Organization and internationally validated (Patel et al, 2007 & Humeniuk et al, 2008) which examine mental health and substance use/abuse respectively - see Introduction: Definitions of Key Terms) with the outcome using multivariate logistic regression and report odds ratios (OR) and 95% confidence intervals (CI). We adjusted the model for age, sex, birthweight, Socio Economic Status, mothers' education, and mother's suicide ideation.

Inclusion criteria

The sample of study participants was taken from the universe of registered Calcutta Kids beneficiaries in the year 2016. Within the geographical area in which it works (with an estimated

population of 20,000 persons) Calcutta Kids invites all families with a pregnant woman and/or a child under three years of age to participate in its programs. Potential study participants (parents of child-beneficiaries at Calcutta Kids) were required to meet the following inclusion criteria: 1) that their child was an active and enrolled Calcutta Kids beneficiary during the calendar year 2016 and had been weighed at least twice during the year through the Calcutta Kids Growth Monitoring and Promotion program; 2) that a family release of medical records to be used for quality improvement research had been signed; 3) that the study participant was not pregnant; and 4) that the study participant was above the age of 18.

Of those families which met the inclusion criteria, study participants were selected based on growth data outcomes of their children. The growth data is based on algorithms from the World Health Organization's Multicentre Growth Reference Study (Bhan, 2004).

Study design

We (the Calcutta Kids team and this writer as PI) conducted a retrospective cohort study using a combination of already collected demographic and child growth data from Calcutta Kids' medical records system and newly collected mental health and parental substance use data for the purposes of this study. We explored the association of mental health status of parents with a worsening in WAZ weight-for-age z score (as an indicator of under-nutrition) of their children in a cohort living in an urban slum in Kolkata. The study included extensive data on the socioeconomic, health and nutrition characteristics of all of the Calcutta Kids beneficiaries whose parents had signed release forms for their health data to be used in research designed to improve Calcutta Kids service delivery. A retrospective cohort design was the most appropriate because the outcome of interest had already been achieved at the time of this study.

The primary outcome for this analysis was weight for age malnutrition and/or growth

faltering. This was defined as 1) children whose last weight taken in 2016 had a WAZ score of less than -3 and/or 2) a WAZ score of less than -1SD and an average negative change of 10 percent per month in weight-for-age z score in children under the age of four over a period of one year in 2016 during which time Calcutta Kids measured beneficiaries 12 times. Since the children in the cohort were followed up for different time points during 2016, we felt that it was inappropriate to compare changes in WAZ without considering the time of follow-up. Hence, we converted the percentage change to a percentage change per month, and imposed an arbitrary cut-off value of 10 percent. This means that a child who had the outcome may have been weighed in January 2016 and December 2016 and multiple times in between, but between the January weighing and the December weighing had a negative drop of at least 120%. Similarly, this means that a child who had the outcome may have been weighed in January 2016 and September 2016 and multiple times in between and then went away to the village for the remainder of the year, for example and therefore had a negative drop in WAZ of at least 90% - or an average of at least 10% per month over 9 months.

As far as we know, this is the first study of its kind to employ this type of malnutrition outcome variable which looks at a WAZ percentage drop in growth. The reasons for the creation of this outcome variable were 1) by looking only at categorizations such as mild, moderate or severe, we miss out on the nuance and range within those categorizations; 2) this type of outcome variable allows for variability within month-to-month growth and seasonal variation; 3) this type of outcome variable allows for the children who were able to regain the weight they may have lost due to a short episode of diarrhea or illness to stay out of the group with the malnutrition outcome variable; 4) this outcome allows for measurement of overall growth trajectory (with appropriate variability within) as opposed to baseline/end line or measurements

at two points in time; and 5) due to the success Calcutta Kids has had in reducing severe malnutrition - a categorization of WAZ less than or equal to -3SD - there were not enough children/cases who fell into that category to make this study statistically meaningful.

Growth data of all children weighed in the calendar year 2016 (n=637) was downloaded from the Calcutta Kids database and then divided into two groups - those with the outcome variable, and those without.

While an effort was made to use only random sampling techniques in this study, the small number of children with the outcome variable made this impossible. The sample of study participants without the outcome variable (n = 588) were chosen randomly and the sample of study participants with the outcome variable (n = 49) were a convenience sample made up of all of the children with the outcome variable whose parents were in the community at the time of data collection.

Sample Size

We calculated the required sample size using the online sample size calculator Sampsize (http://sampsize.sourceforge.net/iface/s1.html#comp). We assumed, based on our experience in working with these families, that the prevalence of mother's mental illness (as measured by the SRQ scores) among the two groups of children - those whose underweight status declined (average reduction of 10% or more in weight-for-age z-scores measured observed over a year) or not - to be 66 and 33 percent, respectively. Assuming power of the study to be 80% at 0.05% significance level, this gave us a sample size of 70, assuming equal sample sizes in both the groups. Unfortunately, we were not able to meet this criterion. The final study sample for the regression models was 29 with the outcome variable and 138 without the outcome variable.

Cases and Controls

Cases were defined as those children with the outcome variable of 1) a final WAZ score of -3 and/or an average negative change of at least 10 percent per month ending in a WAZ below -1 SD. The number of identified cases was 49 (of which 20 were not present in the community at the time of the study - one of the realities of working with a transient urban community) of which 29 participated in the study. The sample of cases was therefore convenient because the administration of the survey was done based on the presence of the cases in the community at the time the survey was being administered.

Of those children in the sample of 637 who did not have the outcome variable and whose parents met the inclusion criteria for the study, a random selection of 138 parental pairs were chosen as controls.

Final Sample Participant Recruitment and Primary Data Collection

As per the standard operating procedure of the Maternal and Young Child Health Initiative at Calcutta Kids, each beneficiary family is provided a monthly home visit during which a routine health exam is administered, basic health information is collected, and solution-focused counseling is provided. The recruitment plan for this study used the established monthly home visit as an opportunity to administer the survey tool as part of a quality improvement strategy at Calcutta Kids. (In addition to the use of the established monthly home visits, separate home visits were made to the homes of the 12 beneficiary families whose children had since graduated from the program and were no longer receiving regular monthly home visits. The following data collection methods were the same.) During home visits Calcutta Kids-employed Community Health Workers visited the homes of the selected study participants; explained the purpose of the study and requested their participation making it clear that they were not required

to participate and that non-participation would in no way jeopardize the other services they currently receive through Calcutta Kids. If the study participant agreed, consent forms were provided, verbally explained, and participants were asked to sign their name; stamp their fingerprint in case they could not sign their names; or provide verbal consent which the Community Health Worker witnessed and signed in case the participant was unable to read and/ or was uncomfortable signing a document which they could not read.

Calcutta Kids' Community Health Workers are proficient at providing home visits. They go through rigorous initial instruction when they are hired and attend ongoing monthly in-house trainings. They have experience in, and are skilled at data collection, and were given specific training by the PI in the administration of the survey tool used in this study. They were given lists of the pre-selected potential study participants to carry along with them on their home visits. During the month of January 2017 at the end of their monthly home visits, the Community Health Workers invited the pre-selected potential study beneficiary parents to participate in the study which was then administered.

The Calcutta Kids Community Health Workers administered a survey made up of two World Health Organization surveys; both of which had already been translated into Hindi and used in India. The Hindi version of WHO ASSIST (Alcohol, Smoking and Substance Involvement Screening Test) 3.0 was downloaded from the World Health Organization website (WHO, 1994); the translated version of the SRQ-20 was provided upon request via e-mail by Dr. Vikram Patel who shared the version he used in his studies in India (Patel et al, 2007). The surveys can be found in the appendices.

The survey usually took between 5 and 20 minutes to administer depending on what answers were given to sensitive questions related to suicidal ideation. The Community Health

Worker's have longstanding ongoing relationships with the study participants. As such, when survey questions caused distress, the Community Health Worker was able to provide support in the moment and was also be able to direct the participant to other supports in the community. If beneficiaries were interested in participating in the study but wished to speak with the Community Health Worker outside of the home, accommodation within a private room at the Calcutta Kids community health center which is within walking distance of all beneficiary homes was made available. At the end of the survey administration, the beneficiary was thanked for their involvement in the study. Specific to this study, Community Health Worker often interacted with each participant couple more than once. It often happened that the father of the child wasn't home at the time of the monthly home visit and a separate visit was made to survey the father. The same protocol was followed for families that were cases and those that were controls.

Confidentiality, informed consent, and data security

Confidentiality at Calcutta Kids is taken very seriously. The Community Health Workers are privy to a tremendous amount of private information in their daily work and are known to many in the community as true confidantes. Identified data is never shared with anyone outside of the office. Additionally, all Calcutta Kids employees are bound by confidentiality clauses in their employment contracts. Completed surveys were kept in a locker with a key held only by the Managing Director of Calcutta Kids. The beneficiary's Calcutta Kids ID number rather than his or her name was written on the survey tool in case a completed survey was dropped or misplaced. Aforementioned electronic medical records data was downloaded from the Calcutta Kids medical records system in the form of an excel sheet. The survey tool data was then entered into that downloaded excel sheet by Calcutta Kids' data entry staff and locked on a password-

protected computer. The final database was further stripped of all identifying information. From that point on anonymity was assured.

As earlier mentioned, along with interviewing study participants, collateral participant data was taken from the Calcutta Kids medical records system. Whenever a beneficiary family enrolls at Calcutta Kids, they sign a release form indicating that their socioeconomic and health data may be used for studies intended to improve Calcutta Kids service delivery. All beneficiary families have signed the release document which was prepared with the assistance of Dr. Richard Cash at the Harvard School of Public Health who specializes in health research ethics and Dr. Jon Rohde, former Chief, UNICEF, New Delhi. A translated copy of the relevant section of the signed release is below:

> Calcutta Kids collects and records usual data of medical/nutritional/public health relevance and importance to better serve its beneficiaries. Such information is encrypted, stored securely, and remains confidential--handled only by Calcutta Kids employees bound by confidentiality clauses in their contracts. Information collected may be used for study purposes outside of Calcutta Kids, but identifying information will never be shared. There is no harm expected from the collection of this data. The clauses mentioned in this document have been read and explained to me. I agree and understand all the terms and conditions mentioned in this form.

Secondary data from Calcutta Kids Electronic Medical Records System

The child growth data along with other socioeconomic and demographic information such as age, gender, mother's education, and poverty index score (Desiere, Vellema, & D'Haese, 2015) was taken from the Calcutta Kids medical records system. All secondary data used in the study was collected during the year 2016.

Addressing sensitivity of study questions

There were sensitive questions on the survey tool which included those in which a beneficiary may have disclosed thoughts of suicide. When a participant replied in the affirmative about suicidal ideation they were provided with on-the-spot counseling to assess imminent danger; were provided with culturally appropriate materials about suicide including hotline phone numbers; and were provided with the opportunity to work individually with a Calcutta Kids employed trained psychologist who was on call at all times during data collection.

The study required parents to participate in this study. It was suggested to the parents that the surveys be administered privately on an individual level. If, however, the couple was uncomfortable participating in the study without the other person present, then the questionnaire was administered in the presence of the other party. We had planned that the final analysis would indicate when both parents were present during the interview as data may be skewed by information being shared in front of the other partner - avoiding the risks associated with potential marital conflict if the couple was not comfortable sharing information privately was to be avoided at all costs. However, this situation never arose. All surveys were administered privately.

Potential study participation benefits were the following: 1) The research will help to answer the question of whether it is necessary to add a mental health component to the Calcutta Kids intervention. If yes, then presumably, the participants will benefit from a more complete, comprehensive maternal and child health program and less childhood malnutrition; and 2) If the participant's answers triggers an intervention for mental health services (in case a participant responds affirmatively to suicidal ideation), then such an intervention could be beneficial - potentially life-saving.

Data Analysis

We used frequencies to describe the outcome in the population. We also compared the proportion of various factors in those children who were present with the child malnutrition outcome variable as compared to those who did not and measured their chi squared associations. We investigated the association of mothers and fathers SRQ scores with the outcome using multivariate logistic regression and reported odds ratios (OR) and 95% confidence intervals (CI). We adjusted the model for age, sex, birthweight, poverty index score, mothers' education all known to be important variables in studies which examine malnutrition. We also adjusted the model for 1) mother's endorsement of suicide ideation, and 2) father's tobacco abuse, both of which were found to have statistically significant chi squared associations with the child malnutrition outcome variable. Tests were carried out at 5% significance levels. Study participants' SRQ scores were added and divided into those who had answered yes to ten or more, and those who answered less than 10. Mental illness was defined as those in the former category. This is the recommended scoring of the SRQ 20 (WHO, 1994) as well as those employed in similar studies (Harpham, 2005; Rahman 2004; Rahman 2004). Using the scoring reference instruction of ASSIST (WHO, 1994), substance abuse treatment was recommended for a total score of at least 4 for tobacco and cannabis; a score of at least 11 for alcohol. Correlation tests were carried out on all the variables in the multivariate logistic regression and the r-value was always less than 0.4 (table not shown). Analyses were performed with Stata 14.2 (Stata Corp., College Station, TX, USA).

Bias

As this is a retrospective study, we cannot fully control for bias because the outcome (child malnutrition) has already occurred, and the relationship to the exposure outcome (parental

mental illness) may only be coincidental. Selection bias was addressed by using random selection when possible and controlling based on the criteria of age, gender, poverty index score, mother's education and mother's suicidal ideation. Additionally, the randomization of controls assisted in attending to diversity and representativeness of the population being studied. While the results can only be representative of those children registered as Calcutta Kids beneficiaries - as that is the larger population being studied, the results may be extrapolated to non-Calcutta Kids-registered children living in the same community, as most of their constraints will be the same.

This study does not determine causality, but will assist in developing a hypothesis around the association between parental mental illness and child malnutrition. Ideally, this study will be followed up with a mental health program intended to reduce parental mental illness. Given the limitations of financial resources, the study is quasi-experimental in that it studies those families from the community which participate in the Calcutta Kids intervention, meaning that there could be particular groups from the community e.g. migrants from particular areas, which will be unrepresented. However, Calcutta Kids has done extensive research into the families which do not participate in its programs, and has found that the primary reason for not participating is that they have greater access to financial resources and can purchase private healthcare at their convenience.

All secondary data was collected during the calendar year 2016 and the primary data was collected in the first quarter of 2017. It is possible that data which is correlated in this study has been impacted by time. The variables most likely to have been impacted by the time factor are socio economic status and child growth. It is possible, for example, that a family which was in one socio-economic quintile in 2016, may have shifted into another quintile based on familial

changes impacting socio-economic status. It is also possible, though unlikely, that children with the malnutrition outcome variable in 2016 did not have the child malnutrition outcome variable at the time of this study's primary data collection. It is unlikely because the data was based on growth data ending in December 2016, and the primary mental health data was collected in early 2017.

Cognizant of the history of colonialism in India and its legacy which has found its way into international assistance programs, this writer continues to be aware of my status as an outsider. I have worked with this community for more than ten years, however, and I have been successful to date in forging a partnership with a group of Indian colleagues who are indeed the face of the organization. My role within this partnership has been primarily that of a fundraiser and technical assistant. While this study fulfills the thesis requirement for a Masters of Social Work at Smith College School for Social Work, the topic already has considerable interest to the Calcutta Kids team, and the implementation and data collection was done in partnership with them. As with Calcutta Kids studies and interventions in the past, those found to be culturally inappropriate or of minimal value to the population will be scrapped. This writer did not interface personally with any of the study participants at the time of the data collection.

One of the biggest biases necessary to address was the expectation that we would find a positive correlation in the study, particularly given the dependence on such a finding for the next 3 parts of the proposed project. Notwithstanding the considerable evidence from the literature review, and our qualitative experience in studying the households of children in the community whose malnutrition has not been reduced, this writer worked closely with a Smith College thesis adviser - a neutral and unbiased observer and mentor in the study - who continually asked

questions and probed on questions of purpose and design to ensure that such bias was reduced as much as was possible.

Disclosures

Regarding relationship between PI, survey team, and study participants, this writer (the PI of this study) is the founder and a co-director of Calcutta Kids. The Calcutta Kids' Community Health Workers conducted the interviews with study participants as part of their routine monthly home visits. Potential coercion of participation was controlled for by 1) the PI not being directly involved in data collection; and 2) during the time of recruitment, it was made clear to the potential participants (both verbally and in writing on the consent form) that in no way will their involvement in this study impact the services they receive through Calcutta Kids.

Benefits for this writer in conducting this study include: 1) further understanding of the causes (and therefore potential treatments) of child malnutrition; 2) baseline data and rationale for a possible mental health intervention into the already existing Maternal and Young Child Health Initiative at Calcutta Kids; 3) evidence for potential program funding for such an intervention; and finally 4) meeting the Smith College School for Social Work MSW degree thesis requirement.

IV. FINDINGS

Research question

The topic of this research is an examination of the relationship between parental mental health and the quality of maternal care giving. The study examines the hypothesis that poor parental mental health (independent variable of data collected exclusively for the purposes of this study), through the pathway of inadequate maternal care giving, negatively impacts early child nutritional status (dependent variable of growth data collected as part of the Calcutta Kids Maternal and Child Health Program during the calendar year of 2016). The specific research question is the following: Do deficits in parental mental health negatively impact early child nutritional status in a small impoverished urban residential community in West Bengal, India? Additionally, the study examines a secondary question which relates to the effect of substance abuse: Is there a pathway of negative impact between a father's substance abuse on a mother's care-giving ability which then impacts their child's growth?

Major findings

Nearly a quarter (23.35%) of the mothers surveyed reported yes to 10 or more mental illness symptoms therefore fitting the mental illness criteria of this study. For fathers, the corresponding number was 13%. Nearly one fifth (17.96%) of mothers reported suicidal ideation. For fathers, the corresponding number was 6.96%. Almost half (42.41%) of the fathers surveyed had an alcohol use score of above 11, which meets WHO ASSIST (WHO, 2010) criteria for alcohol abuse intervention. The chi square associations between the child

malnutrition outcome variable and 1) maternal mental illness; 2) paternal mental illness; and 3) parental units in which both mother and father fit mental illness criteria; were not statistically significant. The association between paternal alcohol abuse and maternal mental illness is also not statistically significant. The chi square association between the child malnutrition outcome variable and those mothers who answered yes to the question, "Has the thought of ending your life been on your mind?" was statistically significant, and regarding this relationship, the logistic regression model (Tables 2 & 3) shows that in comparison to those women who do not endorse suicidal ideation, those women who do endorse suicidal ideation were three times more likely to have a child with the malnutrition outcome variable.

The results begin with demographic and study characteristics of the sample population and focus specifically on those characteristics which are commonly found to be confounding variables in studies examining child malnutrition (Table 1). Most of these characteristics are also present in the logistic regression model (Table 3). This is followed by descriptive statistics (Table 2), which speak directly to the independent variable data related to mental illness and substance use/abuse among parents collected for the purposes of this study. The final section first examines inferential statistics including associations between a set of determinants and co-variables and the malnutrition outcome variable (Table 2) and then presents a logistic regression model based on the results of the study (Table 3).

Demographic and sample characteristics

The study sample was made up of the parents of 29 children with the child malnutrition outcome variable (cases), and the parents of 138 children without the child malnutrition outcome variable (controls). Of the sample, all the mothers participated in the study as did 95% of fathers. Of the children of the study participants, the sex ratio was close to equal - 82 were male, 85 were

female. Of these children, 78% were born with healthy birth weights of at least 2500 grams. The vast majority of these children were under 36 months of age with 23% under 12 months; 37% aged 12-24 months; 32% aged 24-36 months; and 7% aged 36-48 months. The socio economic

Table 1: Demographic and Sample Characteristics				
Total *n*		**Variable**	***n***	***%***
167		**Malnutrition outcome variable**		
		Present	29	17.4%
		Absent	138	82.6%
167		**Parental participation**		
		Mothers	167	100.0%
		Fathers	158	94.6%
167		**Sex**		
		Male	82	49.1%
		Female	85	50.9%
167		**Birthweight**		
		Above 2500	130	77.8%
		Below 2500	37	22.2%
167		**Age**		
		<= 12 months	39	23.4%
		12+-24 months	62	37.1%
		24+-36 months	54	32.3%
		36+-48 months	12	7.2%
167		**Socio Economic Status**		
		Lowest Quintile	35	21.0%
		Quintile 2	31	18.6%
		Quintile 3	37	22.2%
		Quintile 4	32	19.2%
		Highest Quintile	32	19.2%
161		**Mother's Education**		
		No Education	25	15.5%
		Some primary education (between class 1 and class 8)	59	36.6%
		Some secondary education between Class 9 and 12	65	40.4%
		Completed secondary education and some college	1	0.6%
		College Graduate	11	6.8%

Table 2: Descriptive and Inferential Statistics

Variable Name	Full Sample		Child Malnutrition Outcome Variable Present		Child Malnutrition Outcome Variable NOT Present		
	n	%	*n*	%	*n*	%	*p* value
Sex of child	167						0.472
Male	82	49.1	16	55	66	48	
Female	85	50.9	13	45	72	52	
Mother's Ed	161						0.384
No Education	25	15.5	8	28	17	13	
Some primary education (between class 1 and class 8)	59	36.6	9	31	50	38	
Some secondary education (between Class 9 and 12)	65	40.4	10	34	55	41	
Completed secondary education and some college	1	0.6	0	0	1	1	
College Graduate	11	6.8	2	7	9	7	
Birthweight	167						0.675
<=2500 g	130	77.8	26	90	127	92	
>2500 g	37	22.2	3	19	11	8	
Age	167						0.002*
<=12 months	39	23.4	8	28	31	22	
12-24 months	62	37.1	9	31	53	38	
24-36 months	54	32.3	5	17	49	36	
36-48 months	12	7.2	7	24	5	4	
Socio-economic Status	167						0.237
lowest quintile	35	21	11	38	24	18	
quintile 2	31	18.6	5	17	26	19	
quintile 3	37	22.2	5	17	32	23	
quintile 4	32	19.2	4	14	28	20	
highest quintile	32	19.2	4	14	28	20	
Mother's mental health	167						0.913
SRQ Score >=10 (10 or more mental illness symptoms present)	39	23.4	7	24	32	23	
SRQ Score<10 (less than 10 mental illness symptoms present)	128	76.6	22	76	106	77	
Father's mental health	158						0.658
SRQ Score >=10 (10 or more mental illness symptoms present)	21	13.3	3	11	18	14	
SRQ Score <10 (less than 10 mental illness symptoms present)	137	86.7	25	89	112	86	
Combined parental SRQ	158						0.945
SRQ Score >=10 (both parents have 10(+) mental illness symptom present)	6	3.8	1	3	5	4	
SRQ Score <10 (both parents have < 10 mental illness symptoms present)	152	96.2	27	97	125	96	
Suicidal ideation (Mother)	167						0.044*
Yes	30	18	9	31	21	15	
no	137	82	20	69	117	85	
Suicidal ideation (Father)	158						0.967
Yes	11	7	2	7	9	7	
No	147	93	26	93	121	93	

Tobacco abuse (Mother)	167						0.139
ASSIST Score >=4 (meets criteria of abuse)	19	11.4	1	3	18	13	
ASSIST Score < 4 (does not meet criteria of abuse)	148	88.6	28	97	120	87	
Tobacco abuse (Father)	158						0.032*
ASSIST Score >=4 (meets criteria of abuse)	116	73.4	16	57	100	77	
ASSIST Score < 4 (does not meet criteria of abuse)	42	26.6	12	43	30	23	
Alcohol abuse (Father)	158						0.43
ASSIST Score >=11 (meets criteria of abuse)	67	42.4	10	36	57	44	
ASSIST Score < 11 (does not meet criteria of abuse)	91	57.6	18	64	73	56	

status of the families of these children was equally distributed between quintiles. From lowest quintile to highest, the percentage distributions were 21%, 19%, 22%, 19%, and 19%. The Calcutta Kids medical records system had access to the education level of 96% of the mothers in the study. The majority of the mothers had completed primary education and went on to do some high school education. Fifteen percent had no formal education; 37% had some primary education between class 1 and class 8; 40% had completed primary school and completed some high school education; 1 mother completed high school and had some college education; and 7% were college graduates.

Descriptive statistics

Of the 167 mothers who were surveyed, 23% replied yes to ten or more mental illness symptoms on the SRQ-20. Of the 158 fathers who were surveyed, the corresponding percentage was 13%. Of the 158 parental units surveyed, there were 6 in which both parents reported yes to ten or more mental illness symptoms. For reasons which are explained below (in the section which examines the inferential statistics related to the malnutrition outcome variable) one question was taken from the SRQ-20 and examined more carefully. The question was "Has the thought of ending your life been on your mind?" To this question, 18% of mothers replied yes as did 7% of fathers.

While the WHO ASSIST survey (2010) related to substance abuse asks about a wide

variety of substances, the substances mentioned by the study sample were limited to 1) tobacco products; 2) alcohol; and 3) cannabis. WHO ASSIST suggests that a substance abuse intervention is justified for scores of above 4 for all substances except alcohol in which a score of above 11 justifies an intervention. Regarding mothers, 11% had tobacco use scores above 4; no mothers had alcohol scores above 11; and no mothers had cannabis scores above 4. Regarding fathers, 73% had tobacco scores of above 4; 42% had alcohol scores of above 11; and just under 4% had cannabis scores of above 4 (table not shown).

Inferential statistics

The results from the inferential statistical analysis begins with examining the association between a set of demographic co-variables and the child malnutrition outcome variable (Table 2). For the purposes of this study, association refers to chi-square tests of association at 0.05% significance level, meaning that the associations which are statistically significant are 1) different across groups; and 2) that the difference is greater than we might expect to find in nature 95% of the time.

There was not a significant association between the child malnutrition outcome variable and 1) child's sex; 2) mother's education; 3) birth weight; and 4) socio-economic status. However, there was a significant association between the malnutrition outcome variable and child's age ($p=0.002$). As the children get older, malnutrition is less likely to be reduced.

Specific to the study question related to the chi squared association between parental mental illness and the child malnutrition outcome variable, the association was not significant. Of those mothers with children in which the malnutrition outcome variable was present, 24% of them reported 10 or more mental illness symptoms as compared to 23% of mothers who did not have children with the outcome variable. Similarly, the chi squared association between paternal

mental illness and the child malnutrition outcome variable was not significant. Of those fathers with children in which the malnutrition outcome variable was present, 11% of them reported 10 or more mental illness symptoms as compared to 14% of fathers who did not have children with the outcome variable. Of the 158 parental units that were interviewed, 6 units consisted of parents who each reported 10 or more mental illness symptoms. And likewise, the chi-squared association between those parental units and the child malnutrition variable was not significant. Of those parental units with children in which the malnutrition outcome variable was present, 3% of them reported 10 or more mental illness symptoms as compared to 4% of those units which did not have children with the outcome variable.

Each of the SRQ-20 questions was individually examined against the child malnutrition outcome variable. Of the 20 questions, the only chi squared association which was statistically significant was that related to suicidal ideation. Of the mothers who answered yes to the question "Has the thought of ending your life been on your mind?" 31% had children with the outcome variable and as compared with 15% of mothers who did not have children with the malnutrition outcome variable. The chi squared association between maternal suicidal ideation and children with the outcome variable was statistically significant. Of the fathers who answered yes to the question "Has the thought of ending your life been on your mind?" 7% had children with the outcome variable and as compared with 7% of fathers who did not have children with the malnutrition outcome variable. Paternal suicidal ideation and the malnutrition outcome variable were not significantly associated.

Specific to the question related to the chi squared association between substance abuse and the child malnutrition outcome variable, maternal tobacco abuse was not significantly associated with the malnutrition outcome variable due to the small sample (n=1) of mothers who

had a child with the outcome variable who also fit the criteria for tobacco abuse. Of fathers, however, the chi square association between paternal tobacco abuse and the child malnutrition outcome variable was significant. Paternal tobacco abuse appears to be protective against the child malnutrition outcome variable. Of the fathers who met the criteria for tobacco abuse, 57% of them had children with the outcome variable as compared with 77% who did not have children with the outcome variable. Regarding the association between paternal alcohol abuse and the child malnutrition outcome variable was not significant. Of the fathers who met the criteria for alcohol abuse, 36% had children with the outcome variable compared with 44% who did not have children with malnutrition outcome variable.

Regarding the hypothesized pathway from paternal alcohol abuse to maternal mental illness, the chi squared association between these two variables was not significant (p=0.535; table not shown). Of the fathers who abused alcohol, 24% had wives with 10 or more mental illness symptoms compared with 20% of fathers who had wives with less than 10 mental illness symptoms.

Table 3: Logistic Regression Model

Variable	OR	Std. Err	z	P>z	95% CI
Mother's SRQ score >= 10	0.84	0.5	-0.3	0.76	0.26-2.68
Father's SRQ score >= 10	1.05	0.74	0.08	0.94	0.27-4.17
Child's sex (male)	0.95	0.43	-0.1	0.918	0.39-2.33
Age (older children)	1.28	0.33	0.96	0.34	0.77-2.13
Birthweight<=2500g	1.6	1.4	0.54	0.6	0.29-9
Lower SES	0.76	0.14	-1.48	0.14	0.54-1.1
Mother's education (lower)	1.02	0.27	0.09	0.93	0.61-1.72
Mother's endorsement of SI	3.2	1.76	2.1	0.036*	1.08-9.4
Father's tobacco abuse	0.32	0.16	-2.31	0.021*	0.12-0.84
Constant	0.28	0.32	-1.1	0.27	0.03-2.7

Using 1) some of the confounders known to impact child malnutrition study outcomes such as sex, age, low birthweight, socio economic status, mothers education; 2) the parental

mental illness scores; and 3) maternal suicidal ideation and paternal tobacco abuse (both of which were significantly associated with the outcome variable), a logistic regression model was created (Table 3). The model shows that for maternal suicidal ideation and the child malnutrition outcome variable, there is a significant odds ratio of 3.2 (95% CI 1.08-9.4, p=0.036). This means that in comparison to those women who do not endorse suicidal ideation, women who endorse suicidal ideation were three times more likely to have a child with the malnutrition outcome variable. The model also shows a significant odds ratio between paternal tobacco abuse and the child malnutrition outcome variable of 0.32 (95% CI 0.12-0.84, p=021). This means that in comparison to those men who do not meet the criteria for tobacco abuse, men who smoke are 68% less likely to have a child with the malnutrition outcome variable.

Table 4: 2016 Diarrhea Incidence Among Sample Children

Group	Diarrhea Observations	Mean	Std. Err.	Std. Dev.	95% CI
With Child Malnutrition Outcome Variable	29	0.86	0.17	0.91	0.51-1.21
Without Child Malnutrition Outcome Variable	138	0.9	0.09	1.11	0.72-1.1
Combined	167	0.89	0.08	1.08	0.73-1.06
Difference		0.43	0.22		-0.39-0.48
			t=0.1978		
			degrees of freedom = 165		

While not part of the original study design, we performed two additional tests to get a better understanding of this study's sample (those children with and without the child malnutrition outcome variable) as it relates to other nutrition-related indicators. The first indicator was diarrhea incidence, and the second was related to environment. In the first test, we examined diarrhea incidence within the last year against the child malnutrition outcome variable. In areas without specific nutrition and/or diarrhea treatment programs, where there is more diarrhea, there is more malnutrition. Using a t-test we found the associations were insignificant

(Table 4).

In the second test, we examined environment by dividing the population into two groups - those families who 1) live in "tali bari" houses (ground floor concrete huts) or on the ground floor of multi-story tenement buildings; and 2) those families who live above ground level. We then compared the groups to the malnutrition outcome variable using a Pearson chi squared test. The rationale behind dividing these groups is that children living in the conditions found in group 1 are more likely to be crawling around and playing in areas in which there is garbage, sewage (from flooded and non-flooded open drains), animal feces etc. Chi squared associations were not significant (Table 5).

Table 5: Residential Environment

Total	**Variable Name**	**Child Malnutrition Outcome Variable Present**		**Child Malnutrition Outcome Variable NOT Present**		
n		***n***	**%**	***n***	**%**	***p* value**
167						0.163
	Ground Floor Residence	12	41	39	28	
	Above Ground Floor Residence	17	59	99	72	

V. DISCUSSION

This study attempts to shed light quantitatively on qualitative findings suggesting a relationship between parental mental illness and child malnutrition in an impoverished urban community in West Bengal India. The study showed no significant association between these variables. These findings are inconsistent with the literature indicating that in similar contexts the likelihood that mentally ill parents are 1.5-4 times more likely to have children who are malnourished (Harpham, 2005; Rahman 2004; Rahman 2004; Santos 2011). This discussion explores the results of the study as well as its limitations; compares them to other studies; offers possible explanations for the incongruence; suggests areas for future studies which may be practically useful in programmatic application; and speaks to next steps related to the originally proposed 4 part project of which this research was the first. This discussion also speaks to two sub-narratives of the study - stories that revealed themselves through the process of the research. By briefly retelling the journey of the research and the findings-related specific questions, it becomes clear that in many ways, these sub-narratives are indeed the major findings of this study. These major findings are 1) that the Calcutta Kids MYCHI (Box 1) intervention appears to be protective and mediate against the known association between parental mental illness and child malnutrition; and 2) the discovered high rate of mental distress and suicidal ideation among parents (especially mothers) in the studied urban community is a serious problem needing special attention.

While, as indicated, the association between maternal mental illness and child

malnutrition is a known phenomenon which has been studied in multiple countries using multiple study designs (Harpham, 2005; Rahman 2004; Rahman 2004; Santos 2011), this social phenomenon, based on the study findings, appears not to exist among this study's population. Similarly, the additional questions related to paternal mental illness and child malnutrition; the mental health and well-being of parental units in which both parents had mental illnesses and the association with child malnutrition; and the hypothesized pathway between paternal substance abuse and child malnutrition were found not to be significant.

It remains curious as to why this known association between maternal mental illness and child malnutrition does not appear in this community. The most obvious answer is a likely difference between the populations of previous studies and the population of this study. This study examines a population which has been the beneficiary of a multi-year focused nutrition intervention (above and beyond the government sponsored Integrated Child Development Scheme) that has demonstrated its effectiveness by reducing severe malnutrition by more than 70% over a period of three years; has an impressively low rate of severe malnutrition; and, at the time of the study, had only 49 out of 637 children (under 8%) who fit the child malnutrition outcome variable. By contrast, the other studies examined populations without any such interventions beyond status quo government interventions. A possible explanation for the dissimilar findings, therefore, is that the Calcutta Kids intervention is mediating against the known association between maternal mental illness and child malnutrition. This of course is tentative and would need to be quantitatively measured using a study design which would compare a similar urban population without an additional nutrition intervention such as that provided by Calcutta Kids. However, we imperfectly tested this "mediating effects hypothesis" by using this study's sample (those children with and without the child malnutrition outcome

variable) to examine other nutrition-related indicators - diarrhea incidence and environment (Tables 4 and 5). Both of these would likely show a significant relationship with malnutrition in a population without a nutrition specific intervention, yet neither showed a significant relationship. While certainly not conclusive, these statistical tests add more evidence to the theory that Calcutta Kids' MYCHI program is mediating against associations known to increase underweight malnutrition including that of poor maternal mental health.

As part of the data analysis process, we examined the responses to specific questions on the SRQ assessment tool against the child malnutrition outcome variable and found that the only association with statistical significance were mothers who answered yes to the question, "Has the thought of ending your life been on your mind?" ($p=0.044$). Given its significance, this particular question was added to the logistic regression model with the finding that mothers with suicidal ideation were 3.2 times more likely to have a child with the malnutrition outcome variable than a mother who does not have suicidal ideation (95% CI 1.08-9.4). Using the aforementioned explanation of the protective and mediating effect of the Calcutta Kids MYCHI program, it appears that the program has not yet been able to mediate against child malnutrition when it comes to the more serious mental illness symptom of suicidal ideation.

The rates of mental distress and substance abuse observed in this population were high. Nearly a quarter (23%) of the mothers surveyed reported “yes” to 10 or more mental illness symptoms therefore fitting the mental illness criteria of this study. For fathers, the corresponding percentage was 13%. And nearly one fifth (18%) of mothers reported suicidal ideation. For fathers, the corresponding number was 7%. Almost half (42%) of the fathers surveyed had an alcohol use score meeting this study's criteria for alcohol abuse. While the effects of substance abuse and mental illness were not found to be impacting the nutritional status of children in this

community significantly - with, of course, the exception of suicidal ideation - this population appears to have high levels of mental illness symptoms, and fathers rely heavily on alcohol, perhaps as a means of self-medication.

A rather surprising finding of this study was the protective nature of paternal tobacco abuse against the child malnutrition outcome variable (Table 3): an odds ratio of 0.32 (95% CI 0.12-0.84) found within the logistic regression model with statistical significance (p=0.021). It is unclear how to best interpret this finding. One possible hypothesis is that tobacco is often used to relieve mental stress. This finding certainly merits more qualitative investigation.

Because of the broad but shallow nature of questions on both the SRQ and ASSIST surveys, it is unclear what if any patterns are at work in relation to the high rates of mental illness symptoms. Biopsychosocial assessments and carefully constructed qualitative studies would certainly illuminate such patterns. We were particularly curious about those 6 families in this study in which both parents reported yes to 10 or more mental illness symptoms. Brief qualitative interviews were carried out with 4 of these families as part of our ongoing work with them - the remaining 2 families were away at their ancestral villages and not present in the urban community. (Note, only 1 out of these 6 parental units had a child with the child malnutrition outcome variable.) The stories of these families are unsettling, and also telling in that they point to logical and straightforward reasons for the emergence of mental distress caused by unfortunate life circumstances that are neither inherently biological nor psychological:

Family one had a fish-selling business. A customer offered to buy their entire stock of fish, provided a down-payment for the fish, promised to provide the remainder of the payment the following day, took the stock of fish, and ran off without paying the family. This situation landed the family in poverty.

Family two had multiple familial stressors occurring at the same time: 1) a newborn child; 2) the father's brother died of kidney failure; 3) the father's mother was hit by a bus and had to have her leg amputated; she is no longer able to actively help take care of the children; and 4) healthcare expenditures related to the brother with kidney failure drained the family of its financial resources.

Family three legally handed over their “tali-bari” ground level home to a property promoter with the promise that they would have an apartment in a 5 story building on the same premises within a year. Now, 4 years later, they are still living in the temporary housing without running water - a 6x18 foot room in which the family of 4 cook, live and sleep together. The family feels hopeless about their future.

Family four was part of a larger joint family; after the patriarch died, there was some serious family disharmony and the family moved out of the house. Running an independent nuclear family has caused new and unfamiliar financial pressure, and the parents are still hurt by what happened in the larger family.

As mentioned earlier, these stories point to social constraints and occurrences in which mental illness symptoms manifest in the parents. Discussing the differentiation of the social from the biological or psychological is important because of the originally proposed four part intervention of which this research was the first part. The original purpose of the four part intervention was to reduce constraints in childrearing practices which result in, or add to the likelihood of a child having the malnutrition outcome. While this study points to particularly high rates of mental illness symptoms among parents, it does not - beyond these four cases - provide us with adequate information on the causes of these symptoms, and, with the exception of suicidal ideation, it is not associated with the child malnutrition outcome. Beyond a specific

intervention related to addressing suicidal ideation among pregnant women and mothers, it is not justifiable to use this study as the basis for a well-informed mental health intervention for the larger population. Instead, this question demands further investigation into the individual understandings of the reasons behind the high rate of parents with mental illness symptoms.

It is estimated that forty-six percent of Americans will meet criteria for a mental illness at some point during their lifetimes (Woolfolk, 2015 p. 152). Another interpretation of this may be that forty-six percent of Americans will have significant mental distress at some point during their lifetimes - significant distress due to, for example, the loss of a loved one or a traumatic event in which mental illness symptoms are present for an appropriate amount of time but does not inherently demand an intervention. With specific relation to these four families, I am curious about the factor of time and how these same families might answer the questions related to mental illness symptoms six months or one year later. It feels particularly important to state the time factor in this study because, based on this study, I want to be explicit in stating that I am not "medicalising normality" (Woolfolk, 2015 p. 166) in this population. On the contrary, I am suggesting that, according to this study, *only at a specific point in time*, did 18% of mothers disclose suicidal ideation; did a quarter of the mothers report yes to 10 or more mental illness symptoms etc. The rates may be different six months from now, and if the numbers are not, perhaps the individuals making up those rates will be different.

As stated earlier, further investigation into the reasons behind the mental distress and sadness of these parents is required before the creation of an intervention. At the most fundamental level, the reason for this is that if parental sadness is caused by poverty, neither SSRIs nor individual therapy are going to be as helpful as financial security. Neither SSRIs nor individual therapy are going to bring financial security to the family whose financial resources

were drained by hospital bills for the brother who died of kidney failure; neither are they going to assist the property promoter in delivering the promised flat.

But what about suicide and suicidal ideation? This specific issue *is* associated with the study and the child malnutrition outcome variable. Suicidal ideation is a serious symptom and at the point of suicidal ideation, it begins to matter less whether the causes are biological, psychological, or social because an individual's life is in danger. Additionally, in the case of this study's population, the long-term well-being of the child is surely at risk if the mother's life is in danger. At its core, Calcutta Kids is a women's health organization committed to the health and nutrition needs of pregnant women and children. The finding that 18% of mothers in the sample have suicidal ideation and that the likelihood of a mother with suicidal ideation having a child with the malnutrition outcome is 3.2 times higher than a mother who does not, is a major component of the sub-narrative of this study and provides justification for an intervention.

The findings related to suicide ideation are shocking and disturbing. While high levels of human suffering are to be expected in an impoverished urban slum in India, the potential lethality of that communal suffering was surprising not only to this investigator but also to the team involved in this study who are local residents. The tragedy that 1 out of 5 interviewed mothers in this study revealed suicidal ideation demands to be acknowledged, and that fact must stand on its own. At the same time, it is important to look at these numbers contextually. This study is unable to report actual comparisons to other populations within India and internationally given the way the suicidal ideation question was asked in this study. However, there are some useful statistics to put this study's findings in greater perspective. The WHO SUPRE - MISS community survey examined population-wide suicidal behavior in Brazil, China, Estonia, India, Iran, South Africa, Sri Lanka, and Vietnam. For suicidal ideation among these populations, the

range was between 2.6-25.4%; for those who had actual plans of suicide, the range was between 1.1-15.6%; and for those who attempted suicide, the range was between 0.4-4.2% (Bertolote et al, 2005). Specific to India, there are numerous small studies which examine suicidal ideation and suicide attempt rates among specific populations. The studies show numbers which range widely, but are generally between 5-25% and 4-13% respectively (see literature review for more information.) In a cross-national study, Nock et al (2008b) estimate the life-time prevalence of suicidal ideation to be 9.2%. In the US, that number is 15.6%. Again, the way in which the question is asked is important and the lifetime prevalence question is different than the point-in-time question asked in this study. That this study's findings are not inconsistent with other findings related to suicidal ideation, however, does not excuse or minimize the tragedy.

In India, suicide claims the lives of 18.6 out of every 100,000 persons (Patel, 2012). In the US, that number is 10.8 (Nock et al, 2008b); in China, the corresponding number is 23 (Phillips et al, 2012). In most countries, the male to female ratio of suicide is between 3:1 and 7.5:1. India and China defy this trend with ratios of 1.3:1 and 0.9:1 respectively (Nock et al 2008a).

At this point in the discussion, I would like to pause momentarily and speak parenthetically about the personal journey of this research which I hope will add context to the direction of the remainder of the discussion. As is clear from the introduction of this thesis, this study is specifically related to the MYCHI objectives (Box 1) of Calcutta Kids and attempts to add quantitative data as part of a needs assessment to support and define a mental health intervention among parents of child beneficiaries. Based on anecdotal evidence from the field and multiple studies which reveal an association between parental mental illness and child malnutrition, this investigator was confident that this association would be found in the studied

population. My adviser, Dr. Maria Torres was concerned about possible researcher bias given my confidence in expected findings and together we worked hard to reduce such biases (see Methodology chapter). The study revealed, as indicated, that the expected association was not present in the studied population. There was a moment of temporary panic in which I was concerned about the value of the study and what it was that the study had to contribute. That was short lived as soon as it became clear that a possible explanation of the findings was that the Calcutta Kids MYCHI program was acting to protect beneficiary children from the adverse effects of parental mental illness on child nutrition status. While that was not the question being asked in the study, I found comfort in the idea that while the study showed insignificant findings, ten years of implementing a successful nutrition program was perhaps the reason for this finding. At the same time, what was significant (at least to this writer) were the descriptive statistics related to the mental illness and substance abuse outcomes, and specifically the findings related to maternal suicidal ideation. These findings were shocking to me. I had no idea that this population had such high levels of mental distress. Much to my annoyance at the time, Dr. Torres informed me that it was necessary to add research and information about suicide to my literature review; that indeed one of the major findings of the study was related to suicidal ideation and that it was important to understand this finding in the context of the literature. While perhaps unorthodox within the body of an academic thesis, I wish to express deep gratitude to Dr. Torres for this instruction. It was within the literature review that I came to better understand the importance of the sub-narrative of this study.

And it is through this sub-narrative that I bridge what began as a public health epidemiologic study examining mental illness symptoms and anthropometric data to a study of important social work significance. This sub-narrative allowed for an integration of a

psychodynamic framework into an understanding of the larger social context likely fueling the numbers found in this data and spoken about extensively in the literature review. What, for example, is going on behind the findings in this study that 18% of mothers reported suicidal ideation while the corresponding number for fathers is 7%? Why is the general male-female ratio of suicide narrower in India than is it in other parts of the world?

In his writing about the value of psychotherapy, Louis Cozolino (2016 p.3) quotes renowned medical researcher and inventor of the polio vaccine, Jonas Salk who said, "Evolution is a problem-creating as well as problem-solving process." Cozolino goes on to discuss this quote suggesting that most people have experienced things that seemed like a good idea initially but can have unforeseen consequences and prove to be problematic down the road. One of the most fascinating parts of this thesis journey was the introduction to the work of Peter Mayer (2002, 2010, 2016a, 2016b) who writes about the increase in female suicide in India (see literature review). Mayer's work speaks to the relationship between female literacy and female suicide in India: as female literacy (especially in the southern parts of India) improves, so does female suicide. Why? Mayer argues that through literacy, women learn about opportunity, learn about human rights, learn about what is possible, yet, being Indian, feel stuck in a patriarchal society which limits their rights, limits their opportunity, and limits what is possible for them. This speaks to the psychological "double bind" (Bateson, 1972; Lightburn & Sessions, 2016; Mahmoud, 1998) or the sentiment that one is "damned if they do, damned if they don't." Bateson et al (1976) speak of the double bind as "...not in terms of binder and victim, but in terms of people caught up in an ongoing system which produced conflicting definitions of the relationship and consequent subjective distress" (p.42). Mayer describes the feeling of hopelessness leading to suicide brought on by an ongoing social system of gender inequality. Young women in India

today are provided education which introduces them to a world of opportunity. Within the confines of gender roles in India, women find themselves in a double bind wherein if they fully explore opportunities in the way their male counterparts are invited and encouraged to do, they are shunned by society and made to feel as if they are not proper Indian women (this often resulting in violence); if they do not, they feel as if they are stuck behind prison walls missing out on a world of opportunity and possibility. While it feels almost sacrilegious to suggest such a possibility, is it possible that what originally seemed like a good idea in providing women in India with improved education has had the unintended and unforeseen consequences of increased female suicide? Perhaps yes...in the short run.

But that does not mean that providing education to females causes female suicides. Rather, it likely points to the constraint of gender inequality which is keeping positive development strategies from working. In his remarkable book, *Development As Freedom*, Amartya Sen (2001) speaks to freedom as constitutive of development:

> Development consists of the removal of various types of unfreedoms that leave people with little choice and little opportunity of exercising their reasoned agency. The removal of substantial unfreedoms, it is argued here, is constitutive of development (2001,p.xii).

Gender inequality is indeed an "unfreedom". This unfreedom has long been known to be a factor impacting child malnutrition and is one of the reasons that child malnutrition rates are higher in South Asia than in Sub-Saharan Africa (Ramalingaswami et al, 1996). Returning for a moment to the biospychosocial framework of social work, it is useful to think about how the gender inequality in India (the social) impacts the mental well-being of mothers (the psychological) which goes on to impact child growth and brain development (the biological).

In conclusion, this study finds that general deficits in parental mental health do not negatively impact early child nutritional status in the studied impoverished urban residential community in West Bengal, India. However, maternal suicidal ideation is associated with early childhood growth faltering. This lack of association between parental mental illness and child malnutrition is inconsistent with the literature. It is believed that the major reason for this inconsistency is that the population studied in this research has been involved in a multi-year multi-faceted nutrition program which may be mediating against the effects of this association observed in other populations. The main limitations of this study are 1) the small sample of children with the outcome variable; and 2) the "convenience" of that already small sample due to the fact that 20 out of the 49 (40%) children identified as having the outcome variable were away in their ancestral villages at the time of the study (one or the realities of working with a transient community).

This study was introduced as the first part of a projected four-part project encompassing 1) research to quantify the extent of the need for an intervention to address “inadequate maternal and child care”; 2) a community-based intervention-design process; 3) the implementation of the intervention; and 4) an evaluation of the effects of the intervention on child malnutrition rates. The results of part one, which will culminate in the dissemination of this paper, suggest that it is necessary to slightly modify the originally anticipated project plan, i.e. that the overall project must shift to accommodate the nuanced data regarding maternal suicidal ideation this study revealed. This nuance is certainly significant and the story the data reveals is deeply personal and sensitive. Therefore, part two of the project (as well as parts 3 and 4) must be reexamined with the Calcutta Kids team along with female beneficiaries in the studied community. In many ways, the on-the-ground work now begins, and a series of conversations must take place soon to

disseminate these findings within the community and create an agreed upon path which parts 2, 3, and 4 of this project can move forward. Until that time, it is recommended that the Calcutta Kids MYCHI program 1) begin routine assessment for maternal suicidal ideation among beneficiary pregnant women and mothers; 2) that Calcutta Kids create a strong referral network with which to engage and connect those women with suicidal ideation to appropriate services; 3) that gender inequality continue to be discussed in the MYCHI community meetings; and 4) that discussions around suicide be added to the MYCHI community meeting curriculum as well as discussions related to the possible "double bind" situations in which participants may find themselves. It is imperative that all of these points be framed and acted upon within the understanding that the conversations about suicide are inherently fragile; that these conversations are sensitive and must fit into the cultural context in which they are taking place; and that a safety-net is created which can hold and sustain these mothers through dark moments. Such safety nets will surely be created with collaboration between Calcutta Kids and the community and must be established before the 4 recommendations are deemed actionable.

These findings suggest the need to reexamine - at least within the Indian context - UNICEF's conceptual framework of the causes of child malnutrition (Fig 1) which this study employed. While the emphasis of the four part project indeed focuses on “inadequate maternal and child care” at the underlying causal level, this study suggests the urgency to re-operationalize this focus; to re-think and leverage the "maternal" part of the “inadequate maternal and child care” factor; to add inadequate maternal care and gender inequality as specific input areas at the two levels of basic societal level causes, therefore providing three entry points at which improved women's physical and mental health may be addressed. Unbinding women and removing women's “unfreedoms” is an appropriate systemic approach to reducing child

malnutrition in India. And such an approach will certainly save and improve the lives of countless women and children.

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Appendix A: Study Consent Form English

Child ID_____ Mother or Father

CALCUTTA KIDS TRUST

51 Bhairab Dutta Lane
Salkia, Howrah - 711106
West Bengal, India
Phone: 033-2675-7870

Verbal Consent Form

Calcutta Kids is conducting research on the mental well-being of parents of children at Calcutta Kids. If you agree to take part in the study, I will speak with you for about 10 minutes and will ask you questions about your feelings, your thoughts, and how you manage difficult situations. We will keep these answers private and confidential. The information will be used for academic purposes, but only after your name and other identifying information has been deleted. There are no benefits associated with participating in this survey, but it will help us to determine whether Calcutta Kids should have a new program to support parents at Calcutta Kids. Some of the questions are related to sad feelings and thoughts and may be upsetting to you. If you become upset and need support, Sohinidi (known psychologist at CK) will come and meet with us. Other than that, there are no risks associated to participating in this survey. If you do not wish to participate or want to start and then stop, or only answer some of the questions, you may do so and it will have no impact on the services your family receives at Calcutta Kids.

If you have any questions or concerns about this study, please contact Mr. Kalyan Kumar Roy, Managing Director of Calcutta Kids at 9433426780 or Chandan Kumar Das, MYCHI Project Coordinator at 9831960048.

May I proceed with the interview?

1) **Yes**
0) **No**

"I have read the consent form completely before the respondent and the respondent voluntarily agreed to participate in the study".

_____ _____

Name of interviewer **Name of Participant**

Signature of interviewer **Signature/stamp of Participant (optional)**

Date _____ **Date**_____

Appendix B: SRQ-20 Questionnaire English

SRQ-20

A copy of the English version of the Self Reporting Questionnaire-20 is shown below.

1.	Do you often have headaches?	yes/no
2.	Is your appetite poor?	yes/no
3.	Do you sleep badly?	yes/no
4.	Are you easily frightened?	yes/no
5.	Do your hands shake?	yes/no
6.	Do you feel nervous, tense or worried?	yes/no
7.	Is your digestion poor?	yes/no
8.	Do you have trouble thinking clearly?	yes/no
9.	Do you feel unhappy?	yes/no
10.	Do you cry more than usual?	yes/no
11.	Do you find it difficult to enjoy your daily activities?	yes/no
12.	Do you find it difficult to make decisions?	yes/no
13.	Is your daily work suffering?	yes/no
14.	Are you unable to play a useful part in life?	yes/no
15.	Have you lost interest in things?	yes/no
16.	Do you feel that you are a worthless person?	yes/no
17.	Has the thought of ending your life been on your mind?	yes/no
18.	Do you feel tired all the time?	yes/no
19.	Do you have uncomfortable feelings in your stomach?	yes/no
20.	Are you easily tired?	yes/no

Appendix C : ASSIST-3.0 Questionnaire English

A. WHO - ASSIST V3.0

INTERVIEWER ID		COUNTRY		CLINIC	
PATIENT ID			DATE		

INTRODUCTION ***(Please read to patient)***

Thank you for agreeing to take part in this brief interview about alcohol, tobacco products and other drugs. I am going to ask you some questions about your experience of using these substances across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled, injected or taken in the form of pills (show drug card).

Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will not record medications that are used as prescribed by your doctor. However, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential.

NOTE: BEFORE ASKING QUESTIONS, GIVE ASSIST RESPONSE CARD TO PATIENT

Question 1
(if completing follow-up please cross check the patient's answers with the answers given for Q1 at baseline. Any differences on this question should be queried)

In your life, which of the following substances have you ever used? *(NON-MEDICAL USE ONLY)*	No	Yes
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3
d. Cocaine (coke, crack, etc.)	0	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	3
j. Other - specify:	0	3

Probe if all answers are negative:
"Not even when you were in school?"

If "No" to all items, stop interview.

If "Yes" to any of these items, ask Question 2 for each substance ever used.

Question 2

In the past three months, how often have you used the substances you mentioned *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	2	3	4	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	2	3	4	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	2	3	4	6
d. Cocaine (coke, crack, etc.)	0	2	3	4	6
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	2	3	4	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	2	3	4	6
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	2	3	4	6
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	2	3	4	6
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	2	3	4	6
j. Other - specify:	0	2	3	4	6

If "Never" to all items in Question 2, skip to Question 6.

If any substances in Question 2 were used in the previous three months, continue with Questions 3, 4 & 5 for each substance used.

Question 3

During the past three months, how often have you had a strong desire or urge to use *(FIRST DRUG, SECOND DRUG, ETC)*?	Never	Once or Twice	Monthly	Weekly	Daily or Almost Daily
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	3	4	5	6
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	3	4	5	6
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	3	4	5	6
d. Cocaine (coke, crack, etc.)	0	3	4	5	6
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	3	4	5	6
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	3	4	5	6
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	3	4	5	6
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	3	4	5	6
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	3	4	5	6
j. Other - specify:	0	3	4	5	6

Question 4

During the past three months, how often has your use of *(FIRST DRUG, SECOND DRUG, ETC)* led to health, social, legal or financial problems?	**Never**	**Once or Twice**	**Monthly**	**Weekly**	**Daily or Almost Daily**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	4	5	6	7
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	4	5	6	7
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	4	5	6	7
d. Cocaine (coke, crack, etc.)	0	4	5	6	7
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	4	5	6	7
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	4	5	6	7
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	4	5	6	7
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	4	5	6	7
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	4	5	6	7
j. Other - specify:	0	4	5	6	7

Question 5

During the past three months, how often have you failed to do what was normally expected of you because of your use of *(FIRST DRUG, SECOND DRUG, ETC)*?	**Never**	**Once or Twice**	**Monthly**	**Weekly**	**Daily or Almost Daily**
a. Tobacco products					
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	5	6	7	8
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	5	6	7	8
d. Cocaine (coke, crack, etc.)	0	5	6	7	8
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	5	6	7	8
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	5	6	7	8
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	5	6	7	8
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	5	6	7	8
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	5	6	7	8
j. Other - specify:	0	5	6	7	8

Ask Questions 6 & 7 for all substances ever used (i.e. those endorsed in Question 1)

Question 6

Has a friend or relative or anyone else ever expressed concern about your use of *(FIRST DRUG, SECOND DRUG, ETC.)*?	**No, Never**	**Yes, in the past 3 months**	**Yes, but not in the past 3 months**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

Question 7

Have you ever tried and failed to control, cut down or stop using *(FIRST DRUG, SECOND DRUG, ETC.)*?	**No, Never**	**Yes, in the past 3 months**	**Yes, but not in the past 3 months**
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)	0	6	3
b. Alcoholic beverages (beer, wine, spirits, etc.)	0	6	3
c. Cannabis (marijuana, pot, grass, hash, etc.)	0	6	3
d. Cocaine (coke, crack, etc.)	0	6	3
e. Amphetamine type stimulants (speed, diet pills, ecstasy, etc.)	0	6	3
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)	0	6	3
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)	0	6	3
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)	0	6	3
i. Opioids (heroin, morphine, methadone, codeine, etc.)	0	6	3
j. Other – specify:	0	6	3

Appendix D: Study Consent Form Hindi

Child ID_____ Mother or Father

CALCUTTA KIDS TRUST

51 Bhairab Dutta Lane
Salkia, Howrah - 711106
West Bengal, India
Phone: 033-2675-7870

मौखिक सहमति पत्र

कलकत्ता किड्स एक अनुसंधान के माध्यम से जानना चाहता है की बच्चों का माता और पिता का अच्छा मानसिक हालत उनके बच्चों के ऊपर कैसे असर करता है । अगर आप इस अनुसंधान कार्यक्रम में भाग लेने में राज़ी है त□हम आपसे सिर्फ 10 मिनट तक समय लेंगें और कुछ सवाल पूछेंगे अपका भावनाओं, विचारों और आप कैसे कठिन परिस्थितियों क□ संभालते है उस बिषय पर। हम आपका इये दिया गया जबाब क□ बिल्कुल गुप्त रखेंगें। इये जानकारी केवल शिक्षा चर्चा के लिये इस्तेमाल हाग्गा, लेकिन अपका नाम और पहचान क□ बाद दिया जायेगा। इस कार्यक्रम में भाग लेने से आपक□फ़िलहाल कई लाभ नही मिलेगा लेकिन यह भबिष्य में कलकत्ता किड्स के पिता और मातायों के लिये नया प्रा□ग्राम आनेमें हमारी मदत करेगा। इये सवालों में से कुछ दुखद भावनाओं और विचारों से जुड़े हुये हैं ज□सायेद आप क□परेशान भी कर सकता है। अगर आप ज्यादा परेशान ह□जाते और सहायता की जरुरत पड़े त□Sohinidi (कलकत्ता किड्स के मन□बिद) आयेंगे और हमारे साथ मुलाकात करेंगे। उसके इलाबा इये अनुसंधान कार्यक्रम में भाग लेने में कई ज□खिम नहीं है। अगर आप इस कार्यक्रम में भाग लेने में इनकार करे या शुरु करने के बाद बंद कर दें या सिर्फ कुछ सवाल का जबाब दें, आप ऐसे कर भी सकते है परंतु कलकता किड्स से मिलते हुआ सेबायों आपके परिबार के लिये अटूट रहेगा।

अगर आप इस कार्यक्रम के बारे में कई भी सवाल या चिंता है त□ हमारा प्रबंध निदेशक कल्यान कुमार रॉय - 9874426780 और MYCHI कार्यक्रम समन्वयक चन्दन कुमार दास - 9831960048 के साथ संपर्क करें।

क्या में इस साक्षात्कार क□आगे बड़ा सकते है?

1) हाँ
2) नहीं

में इस सहमति पत्र पड़े है और पड़ कर स्वेच्छा से इस अनुसंधान कार्यक्रम में भाग लेने में राज़ी हूँ।

....

साक्षात्कारकर्ता का नाम **प्रतिभागी के नाम**

....

साक्षात्कारकर्ता का हस्ताक्षर **प्रतिभागी का हस्ताक्षर/ अंगूठा छाप (स्वैच्छिक)**

तारीख : ..... **तारीख :** .....

Appendix E : SRQ-20 & ASSIST-3.0 Questionnaires Combined Hindi

सवाल को हाँ या नहीं में जबाब दें :			
क्रम संख्या	सवाल	जबाब	
१.	क्या आपके सर में अक्सर दर्द होता हैं ?	हाँ	नहीं
२.	क्या आपको भूख कम लगती हा ?	हाँ	नहीं
३.	क्या आपकी नीद अच्छी नेही होती हैं ?	हाँ	नहीं
४.	क्या आप जल्दी डर जाते हा ?	हाँ	नहीं
५	क्या आपके हाथ काँपते हा ?	हाँ	नहीं
६.	क्या आप चिन्ता ज्यादा करते हा ?	हाँ	नहीं
७.	क्या आपको खाना ठीक से हजम नंही होता ?	हाँ	नहीं
८.	क्या आपको स्पष्ट सोचने में मुश्किल हा ?	हाँ	नहीं
९.	क्या आप दुखी रहते हा ?	हाँ	नहीं
१०.	क्या आप ज्यादा रोते हा ?	हाँ	नहीं
११.	क्या आप रोज की दिनचर्या में खुश रहना मुश्किल पाते हा ?	हाँ	नहीं
१२.	क्या आप फैसले मुश्किल से ले पाते हा?	हाँ	नहीं
१३.	क्या आपका काम अधूरा रह जाता हा ?	हाँ	नहीं
१४.	क्या आप जीवन में जरुरी भूमिका नहीं निभा पाते ?	हाँ	नहीं
१६.	क्या आपकी चीजो मे रूचि समाप्त हो गयी हा ?	हाँ	नहीं
१५.	क्या आपको लगता हा आप निकम्मे हा ?	हाँ	नहीं
१७.	क्या आपको अपना जीवन खत्म करने का ख्याल आता हा ?	हाँ	नहीं
१८.	क्या आपको हमेशा थकन महसूस होती हा ?	हाँ	नहीं
१९.	क्या आपको पेट में दर्द महसूस होता हा ?	हाँ	नहीं
२०.	क्या आप जल्दी थक जाते हा?	हाँ	नहीं

 # मैं आपको फिर साबादा करती हूँ की आपका दिया गया साराजबाब बिलकुल गुप्त रखेंगे.

सवाल - 1

आप अपनाजीवन काल में निम्न पदार्थों में साकिन पदार्थों का प्रयोग कभी भी किया हा?	Score	
	नहीं	हाँ
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खल्ली, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	3
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	3
c. **गांजा,** भांग, चरस, शिद्धि, गरीजुवाना **etc.**	0	3
d. **सूंघना वाला** (गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)	0	3
e. **नींद लाना वाला** (बनियम सेरेपेक्स , नाइट्रोवेट , कम्पोज , टेन नं०)	0	3
f. **अफीम साबन** (हेरोइन, मारफीन, मथ्याडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	3
g. अन्य तो - स्पष्ट करें	0	3

अगर सभी जबाब नहीं में हातो फिर साद्वारा सबाल पूछा।
जब आप स्कूल में थातब भी ?

अगर सभी जबाब नहीं में हातो साक्षात्कार समापन कर दें ।
अगर इनमें साकिसी का भी जबाब हाँ में हातो हर उपयोग कियागयापदार्थ कालियासबाल-2 पूछें ।

सवाल -2

पिछल तीन महीनों में कितनी बार अपन आपक द्धारा बताय गय पदार्थों का प्रयोग किया ह? (प्रयोग कियगय पहल फिर दूसर etc. पदार्थ क लिय पूछ) ?	Score				
	कभी नहीं	एक बार या दो बार	मासिक	साप्ताहिक	लगभग रोज या रोजना
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खल्ली, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	2	3	4	6
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	2	3	4	6
c. **गांजा,** भांग, चरस, सिद्धि, मरीजुवाना etc.	0	2	3	4	6
d. **सूंघन वाल** (गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)	0	2	3	4	6
e. **नींद लान वाल** (बेन्जियम सेरेपेक्स , नाइट्रोबेट , कम्पोज , टेन नं०)	0	2	3	4	6
f. **अफीम स बन** (हेरोइन, मारफीन, मेथाडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	2	3	4	6
g. अन्य तो - स्पष्ट करें	0	2	3	4	6

अगर सवाल 2 में सभी जबाब नहीं में हो तो सवाल 6 पर चल जायें ।

अगर सबाल -2 में कोई भी चीजों जो उपयोग में आया तो पिछल तीन महीनों में सबाल – 3, 4, 5 क हर सबाल क साथ प्रयोग करें।

सवाल - 3

पिछल तीन महीनों में कितनी बार अपन आपक द्धारा बताय गय पदार्थों (प्रयोग कियगय पहल फिर दूसर पदार्थ) का प्रयोग करन में बड़ी तज इच्छा या तालाब हुई ह?	Score				
	कभी नहीं	एक बार या दो बार	मासिक	साप्ताहिक	लगभग रोज या रोजना
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खल्ली, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	3	4	5	6
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	3	4	5	6
c. **गांजा,** भांग, चरस, सिद्धि, मरीजुवाना etc.	0	3	4	5	6
d. **सूंघन वाल** (गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)		3	4	5	6
e. **नींद लान वाल** (बेन्जियम सेरेपेक्स , नाइट्रोबेट , कम्पोज , टेन नं०)		3	4	5	6
f. **अफीम स बन** (हेरोइन, मारफीन, मेथाडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	3	4	5	6
g. अन्य तो - स्पष्ट करें	0	3	4	5	6

सवाल -4

पिछल□तीन महीनों में कितनी बार प्रयोग किय□गय□पहला, फिर दूसर□पदार्थों क□ प्रयोग स□आपका स्वास्थ, सामाजिक, क़ानूनी या आर्थिक समस्याऐं हुई ह□?	Score				
	कभी नहीं	एक बार या दो बार	मासिक	साप्ताहिक	लगभग रोज या रोजना
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खल्ली, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	4	5	6	7
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	4	5	6	7
c. **गांजा,** भांग, चरस, सिद्धि, मरीजुवाना etc.	0	4	5	6	7
d. **सूंघन□वाल□**(गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)		4	5	6	7
e. **नींद लान वाल** (बल्नियम सेरेपेक्स , नाइट्रोबेट , कम्पोज , टेन नं०)		4	5	6	7
f. **अफीम स बन** (हेरोइन, मारफीन, मथाडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	4	5	6	7
g. अन्य तो - स्पष्ट करें	0	4	5	6	7

सवाल - 5

पिछल□तीन महीनों में कितनी बार नशें क□इश्तमाल क□कारण अपन अपना सामान्य जिम्मद्दारियों या उन कार्यो की उपक्षा की ह□जिनको करन□की अपक्षा आप स□किया जाता ह□? (प्रयोग किय□गय□पहला, फिर दूसर□etc. पदार्थ क□लिय□ पुछ□)?	Score				
	कभी नहीं	एक बार या दो बार	मासिक	साप्ताहिक	लगभग रोज या रोजना
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खल्ली, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	5	6	7	8
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	5	6	7	8
c. **गांजा,** भांग, चरस, सिद्धि, मरीजुवाना etc.	0	5	6	7	8
d. **सूंघन□वाल□**(गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)	0	5	6	7	8
e. **नींद लान वाल** (बल्नियम सेरेपेक्स , नाइट्रोबेट , कम्पोज , टेन नं०)	0	5	6	7	8
f. **अफीम स बन** (हेरोइन, मारफीन, मथाडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	5	6	7	8
g. अन्य तो - स्पष्ट करें	0	5	6	7	8

सबाल - 6 व 7 को कभी उपयोग किय□गय□सभी चीजों (सबाल 1 में हाँ) क□बार□में पूछें ।

सवाल -6

क्या कभी आपक□किसी रिश्तदार, मित्र व अन्य किसी न□आपको नशा करन□मर चिन्ता जाहिर की ह□? (प्रयोग कियगयपहला, फिर दूसर□etc. पदार्थ क□लियपुछ□) ?	Score		
	नहीं कभी नहीं	हाँ पिछले तीन महीनों से	हाँ परन्त् पिछले तीन महीनों में नहीं
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खन्नी, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	6	3
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	6	3
c. **गांजा,** भांग, चरस, सिद्धि, मरीजुवाना etc.	0	6	3
d. **सूंघन□वाल□**(गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)	0	6	3
e. **नींद लान वाल** (बन्जियम सेरेपेक्स , नाइट्रोबेट , कम्पोज , टेन नं०)	0	6	3
f. **अफीम स बन** (हेरोइन, मारफीन, मथाडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	6	3
g. अन्य तो - स्पष्ट करें	0	6	3

सवाल -7

क्या आप कभी अपन□अपन□नशा को कम करन□या पूर्ण रूप स□समाप्त करन□की चष्टा किय□ह□? (प्रयोग कियगय□पहला, या फिर दूसर□etc. पदार्थ क□लियपुछ□) ?	Score		
	नहीं कभी नहीं	हाँ पिछले तीन महीनों से	हाँ परन्त् पिछले तीन महीनों में नहीं
a. **तम्बाकू जनित पदार्थ (** सिगरेट, बीड़ी, खन्नी, पुड़िया (चबाना वाला तम्बाकू), चुरुट etc.)	0	6	3
b. **शराब** (बीयर, वाईन, देशी शराब etc.)	0	6	3
c. **गांजा,** भांग, चरस, सिद्धि, मरीजुवाना etc.	0	6	3
d. **सूंघन□वाल□**(गोंद , डेन्ड्राइट, पट्रोल, बार्निश,नाईट्रस व पेन्ट थिनर etc.)	0	6	3
e. **नींद लान वाल** (बन्जियम सेरेपेक्स , नाइट्रोबेट , कम्पोज , टेन नं०)	0	6	3
f. **अफीम स बन** (हेरोइन, मारफीन, मथाडान , कोडीन, नोरफिन, टीडीजेसीक, प्रोक्सीवोन)	0	6	3
g. अन्य तो - स्पष्ट करें	0	6	3

Thank You

Appendix F: HSR Approval Letter

SMITH COLLEGE

School for Social Work
Smith College
Northampton, Massachusetts 01063
T (413) 585-7950 F (413) 585-7994

December 9, 2016

Noah Levinson

Dear Noah,

You did a wonderful job on your revisions. Our compliments. Your project is now approved by the Human Subjects Review Committee. Please disregard the suggestion for submitting the request for waiver. Your materials are all in order.

Please note the following requirements:

Consent Forms: All subjects should be given a copy of the consent form.

Maintaining Data: You must retain all data and other documents for at least three (3) years past completion of the research activity.

In addition, these requirements may also be applicable:

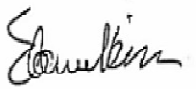
Amendments: If you wish to change any aspect of the study (such as design, procedures, consent forms or subject population), please submit these changes to the Committee.

Renewal: You are required to apply for renewal of approval every year for as long as the study is active.

Completion: You are required to notify the Chair of the Human Subjects Review Committee when your study is completed (data collection finished). This requirement is met by completion of the thesis project during the Third Summer.

Congratulations and our best wishes on your interesting study.

Sincerely,



Elaine Kersten, Ed.D.
Co-Chair, Human Subjects Review Committee

CC: Maria Torres, Research Advisor