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Understanding the Effects of Mental Health on Reproductive Health Service Use: A Mixed Methods Approach

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Abstract

Appropriate and woman-led health care for displaced women is essential to respecting basic human rights. In this paper, we describe the results of an analysis of the association between mental health and reproductive health service use from a sample of Congolese refugee women residing in short and long term camps in Rwanda, with a post-hoc qualitative portion added to expand upon the data-based results. Our findings suggest that structural factors including health policy initiatives affect or even inhibit individual care choices.

Appropriate and woman-led health care for displaced women is essential to respecting basic human rights. With over 20 million refugee women and children in the world at this time, the health of displaced women and children is a serious concern (United Nations High Commission for Refugees, 2010). Humanitarian crises resulting from either man-made causes or natural disasters occur worldwide but the effects are felt much more acutely in the poorest countries of the world where access to resources and health care are already less than optimal (Cohen, 2009). In this paper, we describe the results of an analysis of the association between mental health and reproductive health service use from a sample of Congolese refugee women, with a post-hoc qualitative portion added to expand upon the data-based results. We explore structural factors including health policy initiatives that may affect or even inhibit individual care choices, particularly in attempting to explain women's agency.

Mental Health

Women affected by humanitarian crises have significant trauma-related mental health concerns (Al Gasseer, Dresden, Keeney, & Warren, 2004; Amowitz, Heisler, & Iacopino, 2003). Refugees experience depression and posttraumatic stress disorder (PTSD) at more than double the rate of the United States population (Mollica et al., 2004), but may live in areas where open discussion about mental health issues is stigmatized (Ola et al., 2011). Mental health morbidities have been described as the most pronounced of all health outcomes associated with migration, culture conflict, and resettlement (Carballo, Grocutt, Hadzihasanovic, 1996). Women displaced due to humanitarian crisis are disadvantaged in addressing mental health concerns through limited access to services, as mental health services are sparse in the immediate aftermath of a crisis.

Reproductive Health

Reproductive health service use within refugee camps has received growing attention from funding bodies, but little empiric data exists in the literature on service use within camps. Reproductive health service use can encompass many dimensions, however, in this study researchers focus specifically on the measurable indicators of family planning, antenatal care, HIV/AIDS screening, and sexually transmitted infection (STI) care. These are key indicators in the Minimum Initial Services Package for reproductive health in humanitarian crisis, a set of guidelines for determining reproductive health services in post-disaster/conflict settings (Women's Refugee Commission, 2011). Support for addressing these indicators comes from data that are currently available. For example, a UNAIDS (2003) study examining the prevalence of STIs in refugees in Rwanda found high rates of infection among women who attended antenatal care clinics (trichomonas 31%, syphilis 4%, and gonorrhea 3%). Family planning is a challenge for displaced women, as multiple barriers exist including access to contraception, limited health facility availability, and relational aspects pertaining to gender that prevent women from seeking family planning resources. According to one report, approximately 58% of women in internally displaced person camps in Uganda reported an unmet need (defined as the condition of wanting to avoid or postpone childbearing) for family planning, compared to the national average of 40.6%. However, the need for family planning remains great. The United Nations Children's Fund (UNICEF) estimates that, in a crisis situation, one in five women of childbearing age are pregnant.

Agency

We hypothesize that agency is the theoretical link between mental health and reproductive health service use. Women's agency is a theoretical concept that has been studied and adapted widely throughout many disciplines, including women's studies and sociology (Hitlin & Elder, 2007). The conceptual definition for women's agency in this study is the capacity of a woman to act independently and to make choices freely (Bell, 2011). Central to the concept of agency is the use of context, which can vary widely throughout the world, as well as by education, sex, ethnicity, and socioeconomic status within different regions and countries (Cauce & Gordon, 2013). The concept of women's agency is strongly grounded in feminist examinations of power relations (Fadlalla, 2007; Neidell, 1999), and

provides an excellent tool for understanding women's responses to reproductive health care after trauma exposure. Agency has been linked to increased family planning use, reproductive health decision-making, and sexual knowledge among women in peacetime settings (Curtin, Ward, & Caruthers, 2011). Agency has also been theorized as a factor associated with mental health and reproductive health in limited studies (Lesch & Kruger, 2004). The idea of agency supports the development of women while avoiding the understanding of women as victims (Chetcovitch, 2004). However, agency as a concept remains hotly debated throughout multiple disciplines, where “agency” is quite slippery and is used differently depending on the epistemological roots and goals of scholars who employ it” (Hitlin & Elder, 2007). Advancing an understanding of agency can help to contextualize the individual aspects of a refugee woman's life, so that broader applications to health can be grasped on a micro level.

Our purpose in this analysis was to use data collected from two large refugee camps to test the hypothesis that mental health status and reproductive health service use were associated, while examining agency as an intermediate factor. The priority research question was: "Is poor mental health related to the non-use of reproductive health services?"

Methods

Design

Researchers, in this mixed methods study, incorporated key informant interviews with quantitative data, specifically to extend the level of knowledge and understanding beyond that available from survey data alone. The approach in this study uses qualitative research after quantitative as a means of responding to findings that could not be answered by further analysis of survey data. For this study, we used an existing dataset to first quantitatively evaluate if mental health and reproductive health were linked, using a proxy measure of agency as the theoretical linkage. The qualitative portion included informant interviews, along with email correspondence, that were conducted post-hoc with current and former camp personnel. We present qualitative results to complement quantitative findings in order to offer a broader understanding of the setting and context in which the empirical data were situated.

Human Subjects

The current analysis was exempt from review by the Institutional Review Board at the University of Michigan, Ann Arbor, Michigan, USA, as this was a secondary analysis of previously collected data. This study used de-identified data provided under a data use agreement with the American Refugee Committee. For the original study, in the absence of a formal IRB, the survey collection received approval from the local refugee council of both camps where data were collected, the Rwandan Ministry of Health, and the local office of the United Nations High Commissioner for Refugees.

Sample

The sample consists of 810 Congolese refugee women living in temporary camps in Northwest Rwanda. The sample was drawn from the larger population of two camps, one

having 20,000 total residents, and the other having 15,000 total residents. The women were of reproductive age, 15–49 years old. No one selected for the survey refused participation. The total sample includes 810 women, 405 from each of the camps.

Survey Development

Reproductive health assessment for conflict affected women—The survey used for data collection is the Reproductive Health Assessment Questionnaire for Conflict Affected Women, developed by the Centers for Disease Control with the purpose to identify and prioritize reproductive health needs, evaluate programs and policies, and to disseminate results for improving the reproductive health of the women surveyed. (Division of Reproductive Health, 2007). Originally developed in 2003 (and pilot tested in Ethiopia, the Democratic Republic of Congo, and Columbia), the current version was adapted specifically for the local population.

Surveys were translated into Kinyarwanda, then administered by American Refugee Committee staff who received training in survey administration. Because of low literacy levels of many participants, a two-step informed consent process was used. In the first step, a community health worker went to households selected for inclusion, explained the survey and received verbal consent from the participant. The participant was given a consent form to take to her interview. In the second step, the women went to a central location where interviews were being conducted. The interviewer then obtained written consent, which was attached to their survey form, and then administered the survey.

Conceptual Framework

The conceptual framework (see Figure 1) we seek to test in this study posits that women affected by the trauma-related mental health sequelae endemic in disaster and conflict situations will have worse reproductive health outcomes. This model includes the proposition that women's agency is an intermediary factor in the relationship between trauma-related mental health and women's reproductive health outcomes. With support for the need for a theoretical framework to guide research in this arena (Lesch & Kruger, 2004; Tol et al., 2011), we propose that agency connects trauma-related mental health morbidity and adverse reproductive health outcomes, meaning that agency can have an effect on health outcomes of women with trauma-related mental health morbidity, potentially mediating or moderating or thought of as a direct or indirect pathway. In this model, the circular arrows represent the potential reciprocal relationship between mental health and reproductive health outcomes. Women's agency is supported in this model by structural factors and relational aspects. Relational aspects comprise the relationships and interactions the woman has on a daily basis with her head of household, elders, children, health workers, community members, friends and employers, all of which can have a strong effect on a woman's decisions and her level of agency. These family and community dimensions have an important interplay with mental health morbidity (Igreja, Kleijn, & Richters, 2006). All representations of relational aspects are strongly influenced by culture and gender. Structural factors, or the organization of a system which influences and restricts choice, define the forces that interplay within a woman's life. Access to health services, food, water and housing, as well as access to positions of power, are all controlled by structural factors.

A middle-range theory of human development that also undergirds this manuscript is Bronfenbrenner's Ecological Systems theory (Bronfenbrenner, 1979). This theory is a useful intermediate level of conceptualization because it specifies that an adult woman's characteristics would become an outcome of the influence of environmental systems. In our model, women's agency is formed as a result of interaction with the norms, roles and rules of the microsystems as well as in context within and between each of the five systems (micro-, meso-, chrono-, exo- and macro-), or as Bronfenbrenner characterizes it, within the larger mesosystem.

Measures

Mental health—Aspects of mental health were measured by the Self Report Questionnaire (SRQ-20), a 20-item scale that screens for common mental health disorders (CMD) in primary care settings that have occurred within a four week time period (World Health Organization, 1994). The questions are scored as 0 if the symptom was absent and as 1 if the symptom was present. In an effort to increase sensitivity of the questionnaire to severe, chronic distress, two questions about lifetime suicidal thoughts and attempts that were not part of the SRQ-20 were added to the score in this analysis, thus creating a 22-item instrument and a modified version of the SRQ-20, termed the SRQ-SIB (for suicidal ideation and behavior). The reliability of the 22-item scale was .911. The SRQ-20 has been widely used in the developing world, including studies in Rwanda and Nigeria (Ola et al., 2011; Scholte et al., 2011) and is usually administered by lay interviewers. For this analysis, we used a cut-off score of 7 or greater based on other similar studies among conflict affected African women, which used similar scores (Ola et al., 2011).

Trauma exposure is an important antecedent to mental health morbidity in women generally and especially in post-conflict and post-disaster settings. This survey queried history of conflict and post-conflict gender-based violence by assessing traumatic experiences such as death of a child not due to stillbirth, physical violence during and after the conflict, and sexual violence during and after the conflict.

Demographics and agency index—Demographic indices included age, length of time residing in camps, ever married, husband ever attended school, age at first marriage, and number of children in the household. We developed an agency index to use as a proxy for agency. As agency remains a much-debated concept, conceptually validated tools to measure agency are limited in their conceptual basis. Alkire (2005) describes past use of education as a proxy for agency. Additionally, a recent World Bank policy paper also described education in a similar fashion that can be related to agency, where "education (a human asset) often gives an actor greater access to information (itself an asset) and at times improves his/her capacity to envision alternative options (a psychological asset)" (Alsop & Heinsohn, 2005). The proxy measure we developed represented the closest approximation of agency available within our existing dataset. With this information, a high level of agency was defined in this study as someone who can read, write, and went to school (with low agency being the opposite). The 0 to 3 sum of reading, writing, and going to school was used as a numerical index of agency.

Reproductive health services—Four aspects of reproductive health services were identified as contributing to the research question that were also assessed in the original survey: antenatal care, family planning use, HIV screening, and STI treatment seeking. Family planning use was assessed by asking a yes or no answer to the question, "Are you currently using any method to delay or avoid pregnancy?" Sexually transmitted infection screening was assessed by asking a yes or no answer to the question, "The last time you had any unusual genital discharge, genital ulcers, or sores, did you seek treatment?" Antenatal care use was assessed by asking the yes or no question, "Did you see anyone for antenatal care for this pregnancy?" to women who were currently pregnant or who reported being pregnant in the last two years. HIV screening was assessed with a yes, no, or don't know response by asking, "I don't want to know the result, but have you ever had an HIV/AIDS test?"

Quantitative Analysis

Data were analyzed using IBM SPSS version 21.0 (IBM Corporation, 2012). Univariate statistics were employed to describe the sample's characteristics. Bivariate tests were conducted to assess whether those who do and do not use reproductive health services differ from each other on demographic, reproductive status, trauma history, mental health, or agency characteristics.

Since the survey consisted of dichotomous data, logistic regression was employed to test the relationship between mental health status via the SRQ-SIB and the women's reproductive health outcomes, based upon our proposed conceptual model, where agency is hypothesized as an intermediary factor. Four dependent variables were examined using logistic regression modeling: antenatal care utilization, family planning uptake, HIV testing behavior, and STI treatment seeking behavior. A *p* value of .05 or below was considered statistically significant.

Qualitative Analysis

The qualitative component was added post-hoc to better understand the quantitative data, particularly to expand upon the notion of agency, which was unclear in the quantitative results. The volume of qualitative data obtained was small, but a systematic process was applied. Data collection procedures included telephone interviews with camp personnel and agency representatives. Written notes were collected and analyzed by two experts with experience in women's mental health. Thematic analysis (Hayes, 2000) was employed to recognize, analyze, and describe themes within the data and draw conclusions from the data (Miles & Huberman, 1994). Qualitative validity was assessed using Lincoln and Guba's (1985) four criterion: credibility, transferability, dependability, and confirmability. After analysis, the themes that emerged were triangulated against quantitative data.

Results

A total of 810 women were included in the study. Demographics are described in table 1. Of note is that religion and ethnicity were not assessed at the request of the United Nations High Commission for Refugees due to historical issues related to ethnic violence.

Mental Health and Trauma Exposure

The majority of women in this sample reported at least one emotional health symptom (87%). The mean score on the SRQ-SIB for the total sample was 6.2 ($SD = 5.6$). Using that cut-off, 42.5% of the sample would be considered to be suffering mental distress consistent with a CMD (e.g., anxiety, depression, or posttraumatic stress). Suicidal thoughts or attempts were reported by 11%. Trauma seemed to play a significant role in high symptom levels as women who reported a traumatic event had mean scores that were higher than the total population. Approximately 35% of participants reported gender-based violence during or after the conflict, a figure that also includes sexual violence. Around 25% of participants reported the death of a child that was not due to stillbirth, with 3.5% of women reporting the loss of more than four children to death. For women who reported the death of a child, the mean score was 7.3 ($SD = 5.7$). Women who experienced any physical violence after the conflict had a mean score of 8.2 ($SD = 5.8$), while women who reported a forced sexual encounter during the conflict had a mean score of 9.1 ($SD = 6.5$). Among women who answered "yes" on one or more suicide items, the mean score jumped to 14.1 ($SD = 5.5$). See Tables 1 and 2 for representation.

Reproductive Health

We looked at four main variables representing reproductive health: antenatal care, HIV testing, STI screening, and family planning use. Pregnancy history and outcome information was asked of women with at least one pregnancy in the last two years ($n = 315$) while sexual health questions were asked of all sexually active women ($n = 582$). The majority of the participants had been pregnant at least once (71%), and 39% had been pregnant in the last two years. Over 90% of the participating women had received antenatal care with their most recent pregnancy. Only 11% of the total sample were using any form of family planning. Of women who were sexually active, 13% were using some form of family planning. In terms of HIV screening, 81% of the total sample reported receiving an HIV test and 96% of those were tested during a recent pregnancy. Of the 539 women who reported at least one symptom of an STI, only 7% sought treatment.

Hypothesis Testing

Regression modeling was employed to quantitatively understand the extent to which mental health status was associated with and reproductive health service use, with agency as an intermediary factor. See Table 3 for depiction. Counter to the hypothesis, scores on the measure of mental health status (the SRQ-SIB) were neither consistently nor strongly associated with use of reproductive health services, while agency was not associated with use of reproductive health services or mental health status.

In the first model, we sought to test mental health status, using the SRQ-SIB, as a predictor of antenatal care use, with agency as an intermediary. Neither agency nor the SRQ-SIB predicted the use of antenatal care ($R^2 = .012$, $p = .447$). Likewise, in the second model the SRQ-SIB was not a significant predictor of family planning use ($R^2 = .001$, $p = .996$). Neither agency nor the SRQ-SIB was predictive of family planning use ($R^2 = .000$, $p = .980$). The third model tested the SRQ-SIB and agency as predictors of HIV testing, or more simply put, if agency or mental health status was related to women receiving an HIV test. In

the first regression model, agency was not a significant predictor of seeking an HIV test; however, the SRQ-SIB was related ($R^2 = .012$, $p = .057$). When modeling HIV testing among sexually active women only, agency became highly significant ($R^2 = .012$, $p < .001$) while the SRQ-SIB did not reach significance ($R^2 = .057$, $p = .991$). Adding the variable of having an unexpected sexual encounter as a predictor was not significant in this model ($R^2 = .058$, $p = .999$). In the final model, predictors associated with STI screening and mental health did reach statistical significance. With STI screening, higher scores on the SRQ-SIB were associated with being more likely to seek STI treatment ($R^2 = .059$, $p = .008$).

Informant Interviews

This pattern of quantitative results generated additional questions that could not be answered by data from the survey and statistical methods alone. It became clear that qualitative data were needed in order to situate the quantitative findings and expand upon the notion of agency. Key informants who were camp employees and agency representatives were interviewed to provide information about the camps, the reproductive health and mental health services in place, and the conduct of the survey project. Information provided shed light on the findings and permitted some cautious interpretation by researchers.

Questions that emerged included: "Why was there a disconnect between low levels of literacy, but high levels of reproductive health services use?" "What types of mental health and reproductive health services are available?" "Why were some aspects of reproductive health appropriately utilized (e.g., antenatal care), while some were underutilized (e.g. family planning, STI testing when symptomatic)?"

This qualitative analysis allowed for the identification of four key points: (a) social and economic realities, (b) lack of agency, (c) mental health care and (d) services. The first key point that emerged was the social and economic reality in which the participants resided during the study time period. Interviews revealed that no one refused to participate in the study. As refugees, the participants are guests of the Rwandan government. As guests they are not permitted to work outside of the camp and therefore have highly limited sources of income. The incentive for participation, although very small (e.g., a care package of bar of soap, toothpaste and toothbrush) was enough that a larger number of women wanted to be included than was needed to meet target sample sizes. The social and economic realities are closely tied into next key point.

The second key point that emerged was lack of agency. While scores on the proxy for agency were quite high, the agency index was not a strong predictor in statistical modeling. However, closely linked to social and economic realities of the setting, multiple constraints exist that prevent women from utilizing agency to succeed in terms of advanced education, career, or even trade opportunities. Sex work is common, especially in one camp that is close to the border with the Uganda, as there are so few economic opportunities for the women residing in the camps. Many camp residents choose to leave the camp for other parts of Rwanda where trade, education, and work opportunities are greater. As registered refugees, they can still return to the camp as needed for health care and to receive other camp benefits including food rations. Although this practice is frowned upon, it is very common as it offers a chance at improving life circumstances that is not possible in a crowded, underfunded

refugee camp. Thus, although women in the camps varied in their scores on our proxy for agency (which was derived from their self-reported literacy and education history), other factors inherent in daily survival in a crowded refugee camp impinge on agency.

Mental health needs were another key point, but one where information was sadly lacking. Mental health services are provided by one social worker with limited training in mental health care, and split between two camps, with a total of 35,000 refugees who had fled civil war and genocide. Among a population known to have experienced significant trauma, the lack of mental health resources is surprising.

The final key point that emerged related to services available. All health care is free, although some services are limited or not available. Health care is provided in cooperation with the Rwandan Ministry of Health and camp residents can be referred to district level facilities if advanced care is needed. Antenatal care is available and free providing a possible explanation for the 90% use. Community health workers encourage pregnant women to attend clinics (where HIV testing is part of comprehensive antenatal care), and will visit their homes multiple times to encourage them to come for a visit. While family planning services were noted by informants to be available, they were not promoted, and were available only on request, which likely accounts for at least part of the reason why there is such a low percentage of women who were using any form of contraception. Reasons for non-use could be specifically culturally based but additionally, given the low literacy rates of the population and the lack of donor focus on family planning, many women may not have been comfortable having to specifically request family planning services since they were not routinely offered. The informants interviewed gave very consistent descriptions and explanations converging on clear themes that could be cross-validated in the notes and which were affirmed in conversation with the last informant (Lincoln & Guba, 1985).

Discussion

Our purpose in this analysis was to test the hypothesis that mental health would impinge upon use of reproductive health services in two refugee camps, with agency as an intermediary factor. This study has established that serious mental health issues do indeed exist in the Rwandan refugee camps studied. The 11% rate of suicidality mirrors findings in Nigerian refugee camps (Akinyemi, Owoaje, Ige, & Popoola, 2012). Additionally, the SRQ-SIB gives important insight into the significant level of psychological distress that women in this post-conflict community are experiencing. This includes the mean score of 14.1 on the SRQ-SIB among women who answered "yes" to at least one suicidal symptom. However, counter to the hypothesis, scores on the measure of mental health status were neither consistently nor strongly associated with use of reproductive health services. Additionally, scores on the agency index were not associated as an intermediary factor, leading the researchers to conclude that this proxy measure for agency falls short of accurately measuring women's agency. Since agency was measured statistically only in terms of knowledge gained through education and literacy, the extent to which women were free to use information available to them was not clear quantitatively, therefore qualitative interviews allowed for further study and thus further understanding. Indeed, past studies where a quantitative measure of agency has been employed have had similar results (Dewey

& Knoblich, 2014; McMunn, Bartley, & Kuh, 2006). Qualitatively, we learned that women who are literate may be more able to act independently than those without similar information, but on the contrary, women with knowledge may either not use information by choice or perhaps because the aspect of power related to agency is out of their control.

In order to achieve effective maternal/child health outcomes in crisis situations, women's health service delivery models must attend to both mental health and reproductive health domains, separately or in tandem. In keeping with the findings of this study, recent research suggests that CMDs are much more prevalent than commonly reported (Kagee, Tsai, Lund, & Tomlinson, 2013). The high rates of certain types of reproductive health care suggest that reproductive health service coverage is nearly comprehensive, perhaps because of funding support and structures in place such as community health workers. Additionally, community health awareness that focuses on women's health can potentially be expanded to include mental health awareness, which can lead to progress in decreasing the stigma that is associated with mental health (Ola et al., 2011).

On a broad scale, the response to Millennium Development Goal 5, to improve maternal health, has been to focus on reproductive health, while mental health has largely been sidelined. Informant interviews support that there is little integration of mental health services with other health care services and very few mental health services are available at all. In terms of reproductive health service use, community health workers do target women who are pregnant and bring them to antenatal care appointments where HIV screening is incorporated. However, mental health and agency were largely unrelated to health service use since the decision to seek care appeared to be strongly supported, encouraged, and debatably imposed by the community health workers and camp personnel. It appears that the mental health status of most women was not routinely assessed, which therefore cannot be a strong factor in health care workers' decisions on the type and amount of care provided or recommended. With these strong community supports, which appeared to be in place for reproductive health services but not in place for mental health services, an opportunity exists for promoting both mental health and reproductive health services together in tandem

A synthesis of the qualitative and quantitative findings suggests that the effect of extrinsic constraints is perhaps far more powerful than the effects of individual intrinsic mental health or agency. The most frequently referred to intrinsic factor noted in the qualitative interviews was agency. Women's agency, considered strongly constrained in this study, should continue to be taken into account, with future studies considering measurement at the contextual level. The effect of having multiple constraints on capacity to act in one's own best interest may have an impact on mental health above and beyond grief, trauma exposure, and the stress of life in the camps. Mental health and reproductive health service use may also play out as extrinsic factors that may have a stronger influence than agency. These factors could be manifested as camp services and provisions or regulations, including access to services or issues with the services themselves. Finally, while mental health initiatives are slowly on the rise throughout sub-Saharan Africa, addressing mental health will remain a burden as long as funding agencies such as the US Agency for International Development, which will only support mental health initiatives if they are tied to a MDG (UN Office for the Coordination of Humanitarian Affairs, 2013) avoid making it a priority.

The findings of this study have several limitations. First, this was an analysis of an existing database, and variables for analysis were limited by what was already available. Second, there is the potential for underreporting of symptoms as issues surrounding disclosure of mental health as well as history of sexual violence in Africa are significant (Bartels et al., 2012; Ola et al., 2011). Given the dearth of information in the literature about mental health and reproductive health of refugee women who have not been resettled, this mixed methods study represents a significant contribution.

Conclusion

In this study, we highlight mental health and reproductive health in Rwandan refugee camps. Through qualitative exploration we shed light on quantitative findings and provided cautious interpretation, with recommendations for further research and implications aimed at improving women's health in crisis situations. We analyzed contextual narrations and thus rendered the statistical patterns more coherent. By integrating survey and interview data, we suggest mental health services are badly needed and that, given the better availability of reproductive health services, there may be missed opportunities for addressing mental health needs via integrated programs. Since mental health care services are lacking, providing care for both reproductive and mental health needs at the same time could lead to better outcomes. A significant implication is that those who develop, implement, and evaluate women's health services in humanitarian crises likely need to take the very significant burden of mental health morbidity into account in order to optimize women's overall health outcomes, not only reproductive health outcomes. Although mental health care and reproductive health care are not usually delivered in tandem, the disparity in provision of mental health needs might be most readily redressed by attaching them to the well-established and more universal HIV and prenatal care services. Integrating primary mental health care into reproductive care services could help to achieve key outcomes, including Millennium Development goals 3 (Promote gender equality and empower women), 4 (Improve maternal health), and 5 (Combat HIV/AIDS) (United Nations, 2010).

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Figure 1.
Conceptual Model

Table 1

Sample Characteristics

Demographics	Total sample <i>n</i> = 810	Sexually active women <i>n</i> = 582	Pregnancy within past 2 years <i>n</i> = 315
Age	28.7 (<i>SD</i> = 12.1)	32.3 (<i>SD</i> = 11.1)	30.3 (<i>SD</i> = 9.8)
Years in camp			
1 year or less	17% (138)	22% (121)	18% (56)
2–5 years	33% (264)	34% (192)	38% (116)
5 years or more	50% (408)	45% (251)	44% (135)
Ever married	68% (548)	92% (536)	94% (295)
Husband ever attended school	73% (400)	74% (392)	73% (214)
Age at first marriage	19.4 (<i>SD</i> = 7.8)	18.8 (<i>SD</i> = 4.3)	19.6 (<i>SD</i> = 7.4)
Children in household			
0 children	<1% (1)	<1% (1)	0
1–2 children	29% (161)	29% (158)	30% (93)
3–6 children	41% (331)	59% (324)	62% (194)
7 or more	9% (70)	12% (68)	8% (27)
Reproductive health history			
Ever sexually active	72% (582)	-----	-----
Age at first sexual intercourse	14.6 (<i>SD</i> = 13.2)	18.3 (<i>SD</i> = 2.7)	20.2 (<i>SD</i> = 11.5)
Ever pregnant	71% (571)	96% (559)	-----
Pregnant in the last 2 years	39% (315)	53% (308)	-----
Antenatal care with last pregnancy	90% (322)	90% (315)	-----
Preventing pregnancy now	11% (87)	13% (74)	-----
Desire a child in the future	37% (296)	36% (207)	34% (106)
Ever heard of an STI	87% (707)	88% (514)	89% (281)
Ever heard of HIV	97% (787)	97% (567)	98% (307)
Ever had an HIV test	81% (656)	90% (523)	96% (303)
History of unexpected sexual encounter	6% (51)	9% (51)	11% (36)
Consulted a provider for sti symptoms	7% (54)	9% (50)	7% (23)
STI symptom summary	2 (<i>SD</i> = 1.9)	2.1 (<i>SD</i> = 2)	2 (<i>SD</i> = 1.9)
Mental health history			
Report any emotional health symptoms	87% (628)	86% (469)	85% (248)
Report any suicidal symptoms	11% (78)	7% (64)	11% (34)
Report any psychological symptoms	65% (501)	70% (387)	70% (207)
Report any somatic symptoms	85% (643)	84% (485)	83% (259)
Srq-sib summary score	6.2 (<i>SD</i> = 5.6)	7 (<i>SD</i> = 5.7)	6.7 (<i>SD</i> = 5.6)
Suicidal symptoms	0.2 (<i>SD</i> = 0.6)	0.2 (<i>SD</i> = 0.6)	0.2 (<i>SD</i> = 0.6)
Psychological symptoms	3 (<i>SD</i> = 3.2)	3.3 (<i>SD</i> = 3.2)	3.4 (<i>SD</i> = 3.3)
Somatic symptoms	3.2 (<i>SD</i> = 2.6)	3.5 (<i>SD</i> = 2.7)	3.3 (<i>SD</i> = 2.6)

Demographics	Total sample <i>n</i> = 810	Sexually active women <i>n</i> = 582	Pregnancy within past 2 years <i>n</i> = 315
Trauma history			
Report forced sex during conflict	5% (40)	6% (36)	5% (15)
Report any gender based violence during conflict	35% (284)	38% (219)	49% (155)
	26% (140)	26% (141)	21% (67)
Agency			
Agency summary score (range 0 to 3)	2.2 (<i>SD</i> = 1.2)	1.2 (<i>SD</i> = 1.3)	2 (<i>SD</i> = 1.3)
Ever attended school	70% (568)	62% (359)	61% (191)
Read easily	58% (469)	47% (243)	45% (142)
Write easily	53% (430)	41% (240)	40% (126)

* Sample size is given when the reduced number of respondents is due to logical skip patterns. Other responses have small amounts of missing data from women declining to answer the questions.

Table 2**SRQ-SIB Results by Total Sample and By Camp**

	Total sample <i>n</i> = 810	Camp 1 <i>n</i> = 405 (Mean years in camp = 10.5)	Camp 2 <i>n</i> = 405 (Mean years in camp = 2)
Do you have headaches?	51% (413)	50% (206)	50% (207)
Do you have trouble thinking clearly?	49% (399)	47% (195)	52% (204)
Do you have uncomfortable feelings in your stomach?	44% (352)	42% (172)	46% (180)
Do you become easily tired?	40% (324)	39% (162)	41% (162)
Is your appetite poor?	39% (312)	36% (149)	41% (163)
Is your digestion poor?	36% (290)	34% (139)	38% (151)
Do you sleep badly?	36% (292)	36% (147)	37% (145)
Do you feel unhappy?	36% (292)	35% (143)	38% (149)
Are you easily frightened?	33% (268)	34% (139)	33% (129)
Do you find it difficult to make decisions?	33% (264)	30% (124)	36% (140)
Do you feel easily nervous, tense, or worried?	33% (266)	36% (147)	30% (119)
Have you lost interest in things?	33% (267)	31% (128)	35% (139)
Do you find it difficult to enjoy your daily activities?	32% (255)	33% (135)	30% (120)
Do you feel tired all the time?	30% (240)	29% (118)	31% (122)
Is your daily work suffering?	23% (189)	21% (88)	26% (101)
Are you unable to play a useful part in life?	22% (178)	23% (94)	22% (84)
Do you cry more than usual?	19% (157)	19% (77)	20% (80)
Do you feel that you are a worthless person?	18% (146)	19% (78)	17% (68)
Do your hands shake?	14% (112)	15% (61)	13% (51)
Has the thought of ending your life been on your mind?	8% (68)	6% (25)	11% (43)
Have you ever thought of ending your life?	6% (51)	4% (15)	9% (36)
Have you ever attempted to take your own life?	4% (30)	2% (9)	5% (21)
Summary score (range is 0 to 22)	6.2 (<i>SD</i> = 5.6)	6.1 (<i>SD</i> = 5.7)	6.4 (<i>SD</i> = 5.5)
Somatic symptoms (range is 0 to 9)	3.2 (<i>SD</i> = 5.6)	3.1 (<i>SD</i> = 2.8)	3.3 (<i>SD</i> = 2.5)
Suicidality symptoms (range is 0 to 3)	0.18 (<i>SD</i> = 0.58)	0.11 (<i>SD</i> = 0.45)	0.24 (<i>SD</i> = 0.68)
Psychological symptoms (range is 0 to 10)	2.9 (<i>SD</i> = 3.2)	2.9 (<i>SD</i> = 3.2)	3.0 (<i>SD</i> = 3.0)

* Variables are listed in order of frequency of symptoms.

Table 3

Logistic Regression Models for the Four Main Outcomes with the Mental Health Scale entered as a Whole and with Three Subscales

Model	SRQ-SIB		
	Predictor	OR	p value
Antenatal care use model			
Antenatal care use	$R^2=.012, p=.447$		
Among women pregnant in the last 2 years	Agency score	1.210	.216
$n = 315$	SRQ-SIB	1.107	.667
Family planning use models			
Family planning use	$R^2=.009, p=.275$		
Among sexually active women	Agency score	1.175	.117
$N = 582$	SRQ-SIB	1.005	.819
HIV testing behavior models			
HIV testing behavior among total sample	$R^2=.012, p=.057$		
$n = 810$	Agency score	1.116	.131
	SRQ-SIB	1.036	.042
HIV testing behavior among sexually active women	$R^2=.057, p<.001$		
$n = 582$	Agency score	1.494	<.001
	SRQ-SIB	0.997	.991
HIV testing behavior among sexually active women adding unexpected sexual encounter as a predictor	$R^2=.058, p=.002$		
$n = 582$	Agency score	1.497	<.001
	SRQ-SIB	.565	.761
	Unexpected sex	.973	.999
STI treatment seeking models			
STI treatment seeking behavior among sexually active women	$R^2=.086, p<.001$		
$n = 582$	Agency score	0.837	.138
	SRQ-SIB	1.118	<.001
STI treatment seeking behavior among sexually active women adding STI symptom as a predictor	$R^2=.184, p<.001$		
$n = 582$	STI symptoms	1.393	<.001
	Agency score	0.789	.081
	SRQ-SIB	0.911	<.001
STI treatment seeking behavior among sexually active women adding unexpected sexual encounter as a predictor	$R^2=.090, p<.001$		
$n = 582$	Unexpected sex	0.564	.369
	Agency score	0.839	.145
	SRQ-SIB	1.122	<.001
STI treatment seeking behavior among sexually active women adding both unexpected sexual encounter and sti symptom count as predictors	$R^2=.185, p<.001$		
$n = 582$	Unexpected sex	0.700	.591
	STI symptoms	1.396	<.001
	Agency score	0.793	.089
	SRQ-SIB	1.130	<.001