Author’s response to reviews

Title: Equity of Access to Reproductive Health Services among Youths in Resource-limited Suburban Communities of Mandalay City, Myanmar

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Responses to Editor’s comments

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Dear The Editor,

Thank you very much for your valuable comments to make our manuscript more attractive and comprehensive. We considered all your comments and revised as in our revised version using red-color texts. The responses of editor’s point-by-point comments have been described below. In addition, the revised sentences in manuscript are also shown after point-by-point response.

Lists of Editor’s comments

Suggestion 1: The paper presents figures with very limited explanation of the findings.
Response: Details of the interpretation of the findings and figures has been added in the text results for socio-demographic characteristics and factors associated with accessibility and unmet needs on pages 10-11, page 11, and pages 13-14.

Results, page 10-11
The demographic, socio-economic, reproductive, family and community characteristics of the youths are shown in Table 1. Most of the youths (88%) had left school, with very few of them having attained a high-school level of education. Unemployment rate was considerably high (21%). The personal income of the youths was very low and 40% of them were living with an income under the international poverty line. One-fourth of the youths had one deceased parent (mostly their fathers, who passed away before age fifty). Parental education level and family incomes were mostly low. Although there was a high prevalence of positive perceived norm of peer exposure to RH services, youths had very little knowledge of available types of provider and RH services in their communities. Nearly one-third of the youths had never accessed any type of mass media (books/magazines, TV, radio or internet) for information on RH.

Results, page 11
Table 3 shows the final model of factors associated with overall accessibility. Youths living in the south (adjusted OR (AOR) 0.29, 95% confidence interval (CI) 0.16-0.52) or south-western (AOR 0.36, 95% CI 0.15-0.84) suburbs, having a deceased parent (AOR 0.5, 95% CI 0.31-0.81), never being married (AOR 0.57, 95% CI 0.36-0.90) or never exposed to mass media (AOR 0.55, 95% CI 0.35-0.86) were less likely to access RH services.

Results, page 13-14
Factors associated with unmet needs of RH services
Table 5 shows factors associated with unmet needs of all four components of RH services. A lower unmet need of SRH information was found among young adults (AOR 0.55, 95% CI 0.34-0.91), youth who had a high accessibility (AOR 0.61, 95% CI 0.39-0.94) and high knowledge of RH services and providers (AOR 0.78, 95% CI 0.68-0.90), while those who were not studying in
school were more likely to have an unmet need for SRH information \( \text{AOR 4.47, 95% CI 2.30-8.68} \).

For unmet need of family planning, three significantly preventive factors were being married \( \text{AOR 0.09, 95% CI 0.01-0.97} \), exposure to mass media \( \text{AOR 0.21, 95% CI 0.05-0.83} \) and a high knowledge of RH services and providers \( \text{AOR 0.61, 95% CI 0.41-0.89} \).

Youths who lived in a family having more than 5 family members had a higher likelihood of having an unmet need of maternal health services \( \text{AOR 2.60, 95% CI 1.25-5.37} \) while those who had a perceived norm of peer exposure of RH services had a lower likelihood \( \text{AOR 0.09, 95% CI 0.01-0.76} \).

Youths who lived in the south \( \text{AOR 3.16, 95% CI 1.40-7.16} \) or south-western \( \text{AOR 5.14, 95% CI 1.68-15.75} \) suburbs had a higher unmet need of STI/HIV testing services, whereas preventive factors were being a young adult \( \text{AOR 0.43, 95% CI 0.21-0.86} \), having a perceived norm of peer exposure to RH services \( \text{AOR 0.16, 95% CI 0.05-0.54} \) and having a high knowledge of RH services and providers \( \text{AOR 0.72, 95% CI 0.59-0.88} \).

**Suggestion 2:** Discussion commenting on how these findings compare to the international or regional evidence in this area.

**Response:** The whole discussion has been revised as the editor’s suggestion on pages 14-18.

**Discussion**

Although the level of accessibility to reproductive health services by geographical assessment among youths in resource-limited suburban communities of Mandalay City, Myanmar was high, the financial accessibility was low reflecting a low level of utilization of all RH services. Unmet needs of RH were consistently high for all four aspects of RH. In addition to youth’s individual and socio-economic characteristics, community factors, such as exposure to mass media, high knowledge of RH services and providers and perceived norm of peer exposure to RH services, significantly influenced the youth’s accessibility and utilization of RH services and their unmet needs.

A limited level of accessibility to RH services due to financial aspects was found in our study although the geographical accessibility was adequate. In theory, access to health care can be measured by geographical and economic assessments through actual measurement of the circumstances or clients’ own perceptions \[19,23-25\]. Methods used to measure accessibility in our study were similar to those from the studies conducted in Nepal, Tanzania and Thailand \[19,20,23\]. We found that the geographical accessibility was rather satisfactory in our study compared to other studies \[19,20,23,24\]. To date, little information is available on issues of accessibility to RH services in Myanmar. However, a RH report from the Ministry of Health of Myanmar, which surveyed three townships during 1991 to 2001, mentioned that the distance and travelling-time were not the main barriers to access RH services while financial problems hindered utilization of contraceptives among the poor \[26\]. These findings pointed out that the problems of inaccessibility due to the financial aspect and utilization of RH services have been unsolved for a decade. In contrast, the distance and travelling-time remained an important barrier in the rural areas of Nepal, The Philippines and Malawi \[20,27,28\]. Low accessibility and utilization in resource-limited suburban communities of Mandalay highlighted the inequity of access to RH services between the rich and the poor, and the rural and urban dwellers similar to
previous studies [8,29-31]. In addition, the lower the access to health services, the lower the utilization of those services [20,25,32,33].

In previous studies, the measurement of utilization of RH services varied widely. Some used just one RH service while others used multiple aspects [34-36]. Compared to three studies in the United States of America [37-39] in which multiple aspects of RH services were considered, as in our study, the level of utilization of RH services in our setting was much lower. Surprisingly, the level of SRH utilization among youths in resource-limited communities was similar to that among Chinese university students [36]. This might be explained by active involvement of international NGOs in Mandalay City since the youths in our study confirmed that they mainly received the RH information from NGO staff in their area. For maternal care services, we measured comprehensive maternal care including receiving antenatal care at least once, being delivered by a skilled birth attendant in the last pregnancy and receiving postnatal care. No previous study assessed maternal care services using these criteria. Previous studies measured the coverage of antenatal, delivery and postnatal care separately and in reproductive aged women as well as among youths [31,34,35,40,41]. As a result, the rates of utilization of maternal care services in these studies were much higher than in our study. In contrast, the rate of utilization of HIV testing services among youths including adolescent and young adult in our study was twice of that from a national survey conducted among adolescents alone in four African countries (Burkina Faso, Malawi, Uganda and Ghana) [13].

There is currently no standard definition for calculating unmet needs of RH services, except for unmet need of family planning [42]. In our study, the level of unmet need of family planning was higher than that among the general reproductive-aged population of women in Myanmar and other South East Asian countries [43,44] but lower than that in Pakistan [45]. Factors contributing to this difference could be religious beliefs deterring women from using contraceptives. Discrepancies in utilization and unmet needs of RH services within a country and between countries emphasize the disparity and inequity of accessing services [4,37]. No previous study assessed the level of unmet needs of SRH information, comprehensive maternal care and STI/HIV testing service. Perceived needs of youths to those services definitely played a major role since we found that a majority of the youths wanted to receive the SRH information services and maternal care services even though they perceived that they could not afford them. Therefore, a broad approach to defining perceived needs for those services is warranted so that unmet needs of those services can be calculated in the future.

In general, the factors associated with accessibility to, utilization of, and unmet needs of RH services were interrelated. Youths living in the south and south-western suburbs of Mandalay city had a lower level of accessibility and higher unmet need of HIV testing services. Possible explanations are that the communities in these areas are newly settled and have poor road conditions especially in the rainy season compared to other areas. A lower level of utilization and a higher level of unmet needs for SRH information and STI/HIV testing service among adolescents compared to young adults and among out of school youths compared to current students shows that there is a need to provide SRH information and STI/HIV testing service in RH programs, particularly for adolescents. A higher utilization of RH services among married youths or those who had been exposed to a sexual relationship might be due to them having good spousal communication [46] or perception of their susceptibility of RH problems [47].

Not only individual and reproductive factors, but also family factors played an important role for youths’ RH service utilization. Youths who had one deceased parent or more than five family members were less likely to utilize the services. This was supported by a finding in one
study that the relationship between youths and their parents as well as childhood family conditions influenced the RH service utilization of the youths [38]. Moreover, having a high number of family members in the household may increase the financial problems for the youth’s family.

For community factors, the finding that the higher the level of knowledge on RH services the youths had, the more services they utilized was supported by a qualitative study in Sri Lanka [48]. Likewise, the perceived norm of peer exposure to RH services was similar to a study in Nepal [14] which can be explained by the effect of social norm as described in the Health Belief Model [47]. In addition, media exposure was a consistently significant factor for accessibility to, utilization of, and unmet needs of RH services by youths in our study. Media exposure was also shown to be a significant factor for SRH information among male youths in India [49], sexual information and contraceptives use in China [49,50] and contraceptive utilization in Philippine [27]. In addition, the media for SRH information was shown to be the most common source for unmarried migrant youths in three major cities of China [51].

**Suggestion 3:** Limited concrete recommendations for research and policy

**Response:** Recommendation has been added in the conclusion on page 18-19.

**Conclusions**

Despite the availability of RH services, accessibility to and utilization of the services among youths in the study area were unsatisfactory. The level of unmet RH need of youths, especially family planning, was alarmingly high. Common associated factors of access to and utilization of RH services were residence, financial factors, exposure to mass media, knowledge about the services and providers and perceived norm of peer exposure to RH services.

Financial constraint and affordability of youths to access and utilize RH services is an urgent issue for national policy makers and all stakeholders. Improvement of youth’s knowledge about the existence of RH services is essential. Dissemination of SRH information in common mass media and formal education programs to enhance utilization and decrease unmet needs in these resource-limited areas is strongly advised. Further studies should emphasize on the effectiveness of the mass media on enhancing utilization of those services among youths in these areas.

**Additional revisions**

1) The typing errors have been checked throughout manuscript.

2) References have prepared as the format of BMC.