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Proximity to health care centres and service intake: The case of Community Clinics in Bangladesh*

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Abstract

We investigate how distance from heath centres affects service intake for women and children. Relying on five rounds of recent nationally representative demographic and health survey data from Bangladesh, our logistic regression analyses reveal that proximity to health centres barely affects the intake of health care services for women and children, even in the country's rural areas. Interestingly, this indicates that the newly established Community Clinics have not significantly contributed to the country's intake of health care services. The low service intake may result from their poor standard at the local health centres indicating that improving the service quality can help Bangladesh in raising the intake of health care services. Other ways to encourage people, like mandating ANC and PNC visits and vaccination and the introduction of referral services, can also improve the health service intake rate.

Keywords: Health service delivery, Community Clinics, Health centre's proximity, Bangladesh

JEL-Classification: I12, I18, H51

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1. Introduction

The availability of health care service delivery centres (health centres hereafter) affects the intake of their services (Abbott et al., 2017; Lu and Slusky, 2019; Lindo et al., 2020; De Luca et al., 2021; Abu-Qarn and Lichtman-Sadot, 2022). Previous studies find take-up of health services to be sensitive to distances to the health centres (Kremer and Glennerster, 2011). For example, Lindo et al. (2020) find substantial effects of travel distances on abortion rates. Lu and Slusky (2019) find driving distances to the nearest clinics to increase fertility rates. Thus, policies that reduce travel distances and travel times are likely to increase utilisation of health services (Karra et al., 2017).

The positive effects of the proximity to health centres on service intake are likely to be higher in low-income settings where women and children with low socioeconomic backgrounds cannot access the services for infrastructural, religious, societal or financial constraints (Ensor and Cooper, 2004; Jacobs et al., 2012; Raut and Tanaka, 2021; McGuire et al., 2021). For example, McGuire et al. (2021) find distances to significantly reduce the probability of having a facility delivery in Malawi, which is particularly strong for women with lower socioeconomic status. Even relatively small distances from health facilities are associated with substantial mortality penalties for children in low- and middle-income countries (Karra et al., 2017). Thus, finding out the optimal location of health centres can improve access and ensure the best possible health outcome for a country (Adhvaryu and Nyshadham, 2015).[1]

While improving access to the formal health care sector is a primary public health goal in many low-income countries, the returns to the access are unclear as the quality of care at public health facilities is often considered inadequate (Adhvaryu and Nyshadham, 2015). Previous studies report improved outcomes from improving the quality of service delivery (Arifeen et al., 2005; Chowdhury et al., 2008; Hoque et al., 2014).[2] Thus, the quality of the offered and/or delivered services can affect the intake of health services. In particular, high-quality services may attract many stakeholders to

[1] It is possible to increase access to some types of health care services through home delivery (Herrera-Almanza and Rosales-Rueda, 2020). However, it is not appropriate for many kinds of services like ANC or referrals for fever.

[2] For example, Arifeen et al. (2005) find improvement in the care quality of sick under-five children in first-level facilities in Bangladesh can improve their health outcomes. Chowdhury et al. (2008) find appropriate training and supervision allow safe and effective management of severe pneumonia. Hoque et al. (2014) find regular supervision of workers, even with minimal pre-service training, improves the quality of child health care in first-level health facilities.

enjoy them while people may take the services from other sources or even avoid them when their (or perceptions of the) qualities are poor.

Against this background, we primarily investigate how distances from the nearest health centres affect service intake for women and children in Bangladesh. We also examine whether the service quality of some basic health centres, compared to the other types of health centres in the country, can be an issue. We choose to investigate the case of Bangladesh for two important reasons. First, the availability of several rounds of large scale demographic and health survey data includes the information of distances from different types of health care centres. Second, it is particularly interesting to investigate the contribution of the newly established/revitalised Community Clinics, on which the country is relying heavily for the future delivery of health care services (Planning Commission, 2020*a*).

Bangladesh has progressed impressively on different health indicators in the last two decades, compared to its' neighbours and many other developing countries (Planning Commission, 2020*a*; Sachs et al., 2021). The government aims to continue with the pace and achieve the targets of Sustainable Development Goals (SDGs) by the end of 2030 through strengthening the Community Based Health Care (CBHC) system. Along that line, Bangladesh has established more than one thousand Community Clinics (CCs), the flagship program of the present government, to set up one centre for every 6,000 people (Planning Commission, 2020*a*). The plan is that Community Clinics will assume the full responsibility of health population and nutrition of the entire population of its catchment area (Planning Commission, 2020*b*).

The government planned to establish the Community Clinics in 1996 to extend primary health care at the doorsteps of the villagers all over the country. The construction of Community Clinics started in 1998 and, during 1998-2001, about 10,723 of them were constructed, of which about 8,000 started functioning. The Community Clinics were operational only for a short time as they were closed in 2001 after the change of the government and remained closed till 2008. The government planned to revitalize the Community Clinics in 2009. Since then, around 13,831 facilities have been constructed, with 4,000 more clinics to be built by the end of 2022 (Planning Commission, 2020*b*).

The major services Community Clinics aim to provide are i) maternal and neonatal health care services, including services related to reproductive health and family planning, immunization, acute respiratory infection and diarrhoeal diseases, ii) integrated management of childhood

illness, including nutritional education and micronutrient supplements, iii) screening and referrals for noncommunicable diseases such as hypertension, diabetes, arsenicosis, cancer, heart disease and autism, iv) treatment of minor ailments and first aid for simple injuries, v) health and family planning education and counselling and identification of emergency and complicated cases with referrals and vi) free of cost essential medicines. The Community Clinics provide a woman-friendly platform where about 95 per cent of service seekers are women and children availing various primary health care services near their home (Planning Commission, 2020*b*). To effectively deliver the services, the government aims to ensure adequate staffing of the Community Clinics with proper supervision mechanism (Planning Commission, 2020*a*).

Analysing five rounds of nationally representative Bangladesh Demographic and Health Survey (BDHS) data with logistic regression technique, our investigations reveal that proximity to health centres marginally affects the intake of health service delivery. As a result, the newly established Community Clinics in the country do not significantly contribute to increasing the intake of health services offered by them. This is also partly because a large majority of surveyed individuals are already living within the reasonable proximity of health centres. We also investigate the case separately for rural and urban areas to examine whether the effects of health centre proximity are higher in rural areas.

Our findings contribute to the literature on the effectiveness of some important health service delivery in Bangladesh. While some previous studies examine the issue in different contexts, assumptions about model parameters may lead different results for Bangladesh (Lomas et al., 2021). Our study may particularly contribute to the formulation/improvement of health policies in low-income settings by indicating that the proximity to potentially ill-managed/equipped health centres may not be enough to encourage the intake of health services. We also contribute by discussing the potential policies that can assist in the uptake of important health services in developing countries.

2. Method

We have employed the following specification to model an individual's likelihood to intake a particular health care service:

$$y_i = \alpha + \beta\, D_i + \boldsymbol{\gamma}\boldsymbol{X}_i + \lambda_s + \eta_t + \varepsilon_i, \tag{1}$$

where, for each individual i, the outcome variable y takes the value of one if someone has taken a particular health care service and zero otherwise. We use separate regressions to model the intake of three crucial health care services for reproductive-age women – i) use of modern birth control instruments, ii) making four or more ANC visits and iii) checking up by a trained provider within 42 days of delivery. We also use separate regressions for the intake of three services by the children–i) having all vaccines (for children aged 12-23 months), ii) receiving vitamin A in the last six months (for children aged 9-59 months) and iii) taking advice or treatment for fever symptoms (for under-five children). The reason for choosing these dependent variables is that they are important health indicators and Community Clinics (and some urban health care centres) provide services in those health areas to women and children.[3]

The exposure variable D is a dummy variable indicating whether the distance from an individual's residential area to the nearest health care centre is higher than two kilometres. The coefficient of interest β is expected to be negative to reflect the reduced likelihood of the service intake for women/children living further than two kilometres. Note that the use of the distance cutoff is motivated by the fact that the parliamentary committee for education in Bangladesh has suggested making primary schools available within two kilometres of students' residences (Bdnews24.com, 2021). The same is likely to be appropriate for the health care centres in the country. Nonetheless, we have considered different distance cutoffs and measures and discussed the consequences in Section 3.

The variables included in vector $\boldsymbol{X}$ are likely to be important in determining health service intake for women and children, although differently for different types of services, as found in previous studies (Anwar et al., 2015; Akter et al., 2015; Di Novi and Thakare, 2020). Specifically, $\boldsymbol{X}$ includes

[3] Although Community Clinics are also engaged in providing other services as we mention earlier (Planning Commission, 2020*a*).

a series of categorical/dummy variables affecting the health service intake of the stakeholders. The analysis with women includes a person's age, own education, partner's education, socio-economic status, and rural/urban location of residence. For our investigation with children, the vector $\boldsymbol{X}$ additionally includes the sex of the child and child's age. Note that women's age and education and partner's education, used in the analysis for women, are replaced by the same categories for mother and father.

The term λ, division fixed effects, accounts for possible omitted location variables and the time-invariant differences in administrative divisions affecting service intake. We also include η, survey rounds fixed effects, to capture the changes in the service delivery over the years. Finally, ε is the independently and identically distributed error term.

The problem with the above models is that the variable 'distance from the nearest health centre' may suffer from endogeneity. The potential source of endogeneity in our model may engender from three sources. First, the distribution of health care centres is non-random. It can be the case that the government has established the health centres at locations with higher demand for its services. Second, residential sorting, in which high service intake households may choose to relocate near the health centres to enjoy the benefit of health care services permanently. Third, greater employment opportunities near the health care centres may attract young people who may have a higher demand for some health care services. For example, they can take birth control measures in a higher proportion as they may have a lower desire to have children. All of the factors are likely to be negatively associated with distance from health centres, thus making the exposure variable endogenous to the models for health care services. Not controlling for those factors in the empirical models will overestimate the average effect of distance on the intake of health services.

Endogeneity in empirical models is typically addressed by employing the instrumental variable (IV) approach. Unfortunately, an important limitation of IV estimation is that it estimates the local average treatment effect (LATE) rather than the average treatment effect (ATE), a more policy-relevant quantity. In other words, the estimated impacts of treatments through the IV approach do not usually represent the case for the entire population, nor even to all of the treated observations. Instead, the IV estimate provides the treatment effect only for the people whose choice of treatment

was affected by the instrument. Thus, the estimated treatment effects may vary with the choice of the instruments.[4]

On the other hand, the discussed sources of endogeneity in our models are less likely to be an issue in the context of Bangladesh. The low concern for endogeneity is because, first, the health centres in the country are likely to be established with the consideration of equitable distributions across administrative regions, rather than the demand for health services (Planning Commission, 2020*a*). Second, individuals are less likely to relocate near the health centres since the marginal cost of relocation can be higher than the transportation (and time) cost of visiting the health centres occasionally. Finally, the employment opportunities created by the health care centres, especially when they are small, are likely to be trivial to attract the young people with higher demand for health care services. Therefore, we have not considered employing the IV approaches. However, recognising the endogeneity concern, we interpret the coefficients of the exposure variable as the upper bounds of the average treatment effect of proximity to health centres.

We analyse five rounds of Bangladesh Demographic and Health Survey (BDHS) data – 2004, 2007, 2011, 2014, and 2017. The BDHS is a cross-sectional survey collecting nationally representative demographic and health information every three to four years. Participants of these surveys are recruited via a two-stage stratified sample design. In the first stage, enumeration areas (sample clusters) are selected from the sampling frame, and in the second stage, a systematic sample of 30 households is selected from each cluster. Information obtained in these surveys is self-reported, which have been collected through separate questionnaires for households, women, and men. The community questionnaires have been administered in each selected cluster during the listing and collected information about the community's availability and accessibility of health services. Details of the various rounds of BDHS can be obtained from the published survey reports (NIPORT, M&A and ORCM, 2005, 2009; NIPORT, M&A and ICFI, 2013, 2016; NIPORT and ICFI, 2020).

The BDHS select married women of reproductive age (15-49 years) that include 11,440, 10,996, 17,842, 17,863 and 20,127 participants for 2004, 2007, 2011, 2014 and 2017 survey rounds, respectively. From the 78,268 surveyed women, we drop 2,891 widowed, 1,013 divorced, and 1,236 separated women, leaving us with 73,128 observations. Finally, we drop 88 participants with miss-

[4]For example, the use of different instruments make the IV estimates of the annual returns to schooling vary between 4.8 and 14.0 per cent (Ichino and Winter-Ebmer, 1999).

ing weights to get a total of 73,040 women. Thus, our analysis of women's birth control service intake includes 11,440, 10,996, 17,749, 17,863, and 20,127 women for 2004, 2007, 2011, 2014, and 2017 rounds, respectively.

We follow similar restrictions for constructing samples for analysing other health service delivery for women. For the case of (four or more) ANC visits, restricting our sample to mothers with less than five years of old children leaves us a total of 27,101 observations. From that, we drop 11 observations with missing weights to get the final analysis sample of 27,090 women. For the analysis of the intake of PNC service by a trained provider, we additionally drop 1,161 mothers who either have not mentioned whether they have their health checked after hospital discharge (or home delivery) or fail to mention the type of the service provider. Thus our final sample for the analysis of PNC service by a trained provider is 25,929 women.

Birth records data in the survey include a total of 201,576 children, of which 33,605, 30,527, 45,844, 43,772 and 47,828 belong to 2004, 2007, 2011, 2014 and 2017 survey rounds, respectively. From that, we only retain 7,223 last-born children aged 12-23 months to construct our analysis sample for child vaccination. On the other hand, for the analysis of vitamin A intake in the last six months, we retain 26,406 last-born children who belong to the age of 9-59 months. We then drop 963 observations for missing information about vitamin A intake and 2 observations for missing wights. Thus our analysis sample for vitamin A intake includes 25,441 children. Finally, for the analysis of advice sought for fever, we retain 11,755 under-five children who have suffered from fever in the last two weeks of the survey. From that, we drop 4 observations for missing wights to get our analysis sample of 11,751 children.[5]

The primary outcomes of interest are three different health service intakes each for women and children. Here, the three binary outcomes for women are defined as follows: i) uses birth control methods, that takes a value of one if anyone currently uses a modern method and zero otherwise, ii) has made adequate ANC visits, that takes a value of one if anyone makes four or more ANC visits and zero otherwise, and iii) has received PNC service, that takes a value of one if anyone receives PNC service from a trained provider within 42 days of delivery and zero otherwise.

[5]The deceased children are included in our analysis sample. However, our conclusions remain unaffected when they are dropped from the analysis.

The three important health services for children are defined as follows: i) vaccination, in which children aged 12-23 months who have received all vaccines takes a value of one and zero otherwise, ii) vitamin A intake, in which child (aged 9-59 months) who has received vitamin A in the last six months takes a value of one and zero otherwise, and iii) have sought referral for fever, in which among under-five children with fever symptoms who have received advice or treatment takes a value of one and zero otherwise. These health care services are important indicators of the usefulness of health facilities to the catchment population, and therefore we have employed them in our analysis.

Proximity to the nearest health facility is the main variable of interest in the study. We categorise the variable as dichotomous, taking a value of one when someone lives further than two kilometres of any health centre and zero otherwise. We choose the dummy variable due to its' straightforward policy implications. However, we have also discussed the consequence of using different forms of distances in the model to confirm that our results are not dependent on the choice of distance cutoff. Table 1 presents year-wise summary statistics of the dependent variables, indicating significant differences in some indicators between people living within two kilometres of health care centres against those living apart.

[Table 1]

Based on the previous literature, we consider a total of five potential confounding factors in the analyses. For the analysis of women's health care services, they are woman's age (seven age groups: 15-19, 20-24, 30-34, 35-39, 40-44 and 45-49 years, with the 25-30 years group as the reference category), woman's education (primary, secondary and higher, with the uneducated women as the reference category), partner's education (primary, secondary and higher, with the uneducated partner as the reference category), socio-economic status (poorer, middle, richer and richest, with the poorest group as the reference category), rural (with the urban households as the reference category), administrative divisions (Barishal, Chattogram, Khulna, Rajshahi, Rangpur and Sylhet, with Dhaka as the reference category) and time (2007, 2011, 2014 and 2017 waves, with the 2004 wave as the reference category). For the analysis with children, we additionally include female (with the male as the reference category) and child's age (less than 12 months and 12-23 months, with the child aged 24 or more months as the reference category). Table 2 presents the number of

observations in each category of the exposure and control variables employed to analyse the health service intake of women and children in Bangladesh.

[Table 2]

3. Results and Discussion

We estimate model (1) for each of the dependent variables considered in this study. With the binary nature of our dependent variables, we estimate both the linear probability models (LPMs) and the logistic regression models but prefer the latter.[6] Each of the independent variables takes the form of a dummy variable, and so the OLS estimates and the marginal effects (MEs) from the logit models indicate the percentage point (pp) changes in the probability of a service intake for a particular group/variable, compared to the reference group. Note that the reference groups for the analysis of woman health service intake are women living within two kilometres of any health centres, belong to the lowest SES group, has no education both for herself and her partner, located in the urban areas and the Dhaka division, aged 25-29 years and surveyed in the 2004 round of BDHS.

The LPM estimates in Column 1 of Table 3 indicates no significant effect of distance on the use of modern contraceptives.[7] This is not surprising as many birth control devices are widely available in the local shops in Bangladesh, as we observe in the latest BDHS survey (NIPORT and ICFI, 2020). For all other control variables, we mostly observe significant effects that are also in line with our expectations. For example, women's age demonstrates a quadratic relationship with the use of contraceptives, which remain lower at a young age and then increase until they reach 35-39 years and decrease after that. The pattern is generally expected as women's demand for contraceptives increase until they reach a certain age, which then falls as they move towards the end of their reproductive age. Previous studies find that many women, believing that fertility declines from mid-30s, stop using contraception once they reach 40 years of age (Allen et al., 2013).

[Table 3]

[6] This is because logistic (and probit) regressions, compared to the OLS, have two important advantages. They provide non-constant marginal probabilities that are more realistic, and they predict probabilities within the plausible bound of [0-1].

[7] All the tests in this study, unless mentioned otherwise, are conducted at the 5 per cent significance level. The regressions account for survey weights, and standard errors are adjusted for within-cluster correlations.

Own schooling generally increases contraceptive use. Better-educated women are likely to have preferences for smaller families and thus higher demand for contraceptives (Di Novi and Thakare, 2020). On the other hand, women with partners having secondary or higher education have a lower use for contraceptives. The observed pattern of birth control measures can be due to an increased use of birth control devices for men, associated with their increase in education, as we observe in BDHS (NIPORT and ICFI, 2020). Interestingly, fewer women in the topmost socioeconomic status (SES) group use contraceptives compared to the bottom one. Some previous studies find a similar pattern and explain it as a consequence of the national family planning programs that usually target poor women (Vu et al., 2016).

There are regional variations in the use of contraceptives, although rural women use them to a lesser extent, as observed in earlier research (Di Novi and Thakare, 2020). Fewer women in two conservative regions in Bangladesh –Chittagong (Chottogram) and Sylhet divisions –use modern birth control measures compared to their counterparts in the Dhaka division; more women in the remaining four divisions use modern contraceptives. Finally, the use of modern birth control methods increase over the survey periods. The overtime increase in modern contraceptive use is likely due to the government encouragement for family planning as well as the overall modernisation of the country (UNDP, 2017). All these results are consistent with some previous studies. For example, Amin et al. (2010) find that mother's education, wealth index and place of residence are closely associated with access to maternal and newborn healthcare services in Bangladesh.

The marginal effects from the logit model in Column 2 are comparable to the OLS estimates. Since this generally holds for our entire analysis, we will only consider the former to explain the intake of other health care services.

Column 4 presents the results from the model of taking (at least four) ANC visits. The results indicate that the ANC service intake is lower by 4.1 percentage points for the people living further than two kilometres of any health centres, compared to their counterparts living within two kilometres of the centres. The negative effect of distance is a reflection of the fact that pregnant women struggle to visit a distant health centre (Lu and Slusky, 2019; Herrera-Almanza and Rosales-Rueda, 2020). Unfortunately, the effect is again neither practically large nor statistically significant.

Among other control variables, ANC service intake drops with women's age but increases with their own and partner's education and socioeconomic status. Higher age can be associated with

higher birth orders that may reduce the need for antenatal care services. Akter et al. (2016) find women with more than one child utilising ANC services to a lower extent, due to their previous pregnancy experiences and time constraint resulting from an increased responsibility of child care. On the other hand, higher education and SES can increase the demand for the service among women (Di Novi and Thakare, 2020). Again rural mothers take lower ANC services, but the intake varies by administrative divisions, reflecting the difference in socio-cultural factors (Di Novi and Thakare, 2020). Finally, the ANC service intake increases over time which is due to the increased awareness for maternal and child health care services in Bangladesh (Akter et al., 2018).

Next, we discuss the model of PNC service intake from a trained provider within 42 days of delivery. Column 6 results indicate that the postnatal care service intake for the mothers living further than two kilometres of any health centres is lower than their counterparts living within two kilometres of the centres. In particular, the PNC service intake is lower by 3.5 percentage points for the former than the latter group, but the effect is not statistically significant. The results for all other control variables closely follow that of the ANC intake.

For the analysis of the intake of health services by children, the reference groups are boys older than two years, have uneducated parents, belong to the lowest SES group, lives within two kilometres from any health centres, located in the urban areas and Dhaka division, whose mother's age is 25-29 years and are surveyed during the 2004 round of BDHS. Our results in Column 8 indicate that the probability of having (all the required) vaccination is 3.8 percentage points lower for children living over two kilometres of any health centres compared to their counterparts, but the effect is not statistically significant. MEs of other control variables indicate a lower vaccine intake for a child with older mothers (who are usually unaware), but as observed in (Di Novi and Thakare, 2020), the intake increases with parental education and wealth, indicating the role of consciousness and capacity in vaccination. Finally, we observe significant variation in the vaccination completion rates among children of different regions and periods.

Results from the model of Vitamin A intake, presented in Column 10, indicate a statistically significant and negative impact of living further from the health centres. In particular, the results indicate that the Vitamin A intake is significantly lower by 5.2 percentage points for children living two kilometres further from health centres, compared to the reference group. The effect of other control variables in the model, for similar reasons, closely follow the results for vaccination.

Finally, we estimate the model for taking advice for fever of under-five children. The probit model marginal effects in Column 12 indicate no significant impact of distance on asking for advice. As observed earlier, the intake of the service is lower for older mothers but increases with the rise in parental education and wealth (Arifeen et al., 2008). The advice sought is lower in rural areas, although there are variations across the administrative divisions. Similar to what is observed for other services, the intake of advice for fever increases over time. It was lower for girls which can be due to gender bias as Ismail et al. (2019) find that care-seeking rates for female neonates are lower than males across several South Asian countries. Finally, lower advice for older children can be a consequence of reduced need for advice for fever.

Our previous analysis relies on the binary exposure variable indicating the two kilometres proximity to health centres. The reason for choosing the cutoff of two kilometres is for its' relevance and straightforward policy implications (Bdnews24.com, 2021). Now, to see whether our results are robust to the cutoff change, we choose different distance cutoffs for the exposure variable and repeat the previous analysis. Marginal effects of the distance variables are presented in Figure 1. The figure indicates that all the service intake generally decreases as the distance cutoff increases, in line with our hypothesis. However, the changes are only marginal. The statistical significance only holds for vitamin A intake for any distance cutoff over or equal to one kilometre.

[Figure 1]

We have also tried using other forms of the exposure variable to see whether it affects our findings. For example, using (log of) distance from nearest health centre (Table A.1) provides a similar conclusion. An attempt to use a binary variable indicating whether there is a health centre in own village/union also keeps our conclusion unaffected (Table A.2). The use of linear probability models in all cases also does not affect our conclusions.[8]

Our models control for the potential differences in the service intake between urban and rural areas as the transport infrastructure is relatively weak in the latter. Next, we investigate whether the relationship between health service intake for women and children living in rural areas are different than their urban counterpart.[9] To do so, we run separate regressions for rural and urban

[8] Results are available from the authors upon request.

[9] Specifically, we investigate whether rural dummy has interactions with other control variables in the model.

women and children for all the dependent variables in our analysis. Marginal effects from the logit model indicate that proximity to health centres significantly affect the intake of vitamin A for rural children (Table 4). However, the size of the coefficients in urban and rural areas are comparable, while the statistical insignificance for urban areas can be due to a much smaller sample size. Therefore, we do not rule out that proximity to health centres can affect vitamin A intake in rural and urban areas.

[Table 4]

The previous analysis thus indicates no significant impact of proximity to health centres on five out of six cases. The only significant effect is observed on children's vitamin A intake. Since our estimates of distances are the higher bound of the impact, our findings indicate that setting up new health centres may not increase the intake of health care services. The previous observation can be interesting as this study also aims to investigate the contribution of the Community Clinics' in Bangladesh. To do so, using the 2017 round of BDHS data and model (1), we have predicted the service intake for the counterfactual scenario of not having no Community Clinics in the country.[10] Comparing the results with the current scenario, we find that the intake of vitamin A would not have been affected at all without the Community Clinics (Table 5). The reason behind the low impact of Community Clinics is that only a small proportion of people live over two kilometres from any health centres (Table 6). This is true even when we do not consider the Community Clinics.

[Table 5]

[Table 6]

The low-impact of health centres can engender from the poor quality of health centres. The Community Clinics in Bangladesh have been criticized by the local media and some previous studies for the lack of a monitoring system to ensure quality service delivery in the country (GoB, 2019; Bdnews24.com, 2020). To investigate the case, we repeat the main analysis when the nearest Community Clinics are not further away from other types of health centres. Results in Table 7 show that the impact of distances on the intake of vitamin A is similar to the case when we also

[10]Here, we implicitly assume that the Community Clinics has not affected the locations of other types of health centres –an assumption likely to hold as Community Clinics are the most basic form of health centres.

include other types of health centres. The previous finding confirms that the Community Clinics' effectiveness in the delivery of vitamin A to children is not very different from other types of health centres. An analysis with women and children whose closest health centres are not XXs also fail to indicate a higher impact of distance on the intake of health services (Table A.3).[11] Note that a dummy variable indicating when Community Clinics are not the nearest health centre is not statistically significant in any of the models Table A.4.

[Table 7]

We also repeat the analysis by urban and rural areas to confirm that the findings apply to both types of regions. The results in Table 8 indicate significant impacts of distances on vitamin A intake in rural areas. However, the size of the effect for the service is comparable to that for urban areas. Thus we do not reject the hypothesis that proximity to both the Community Clinics and other health centres only marginally affects the intake of important health services.

[Table 8]

While our previous findings are inline with some earlier studies like GoB (2019); Hanifi et al. (2020), they seem to be in opposition to the stated preference for nearby health centres. In particular, when asked whether distance to health facilities is a problem, around 43 per cent of respondents in the 2017 round of BDHS have reported "big problem", against the option "not a big problem/no problem." However, this is consistent with the fact that some rural outpatients are willing to travel further to obtain better treatment when provider quality or reputation is a particular concern (Qian et al., 2009). It is important to note that the result can also be driven by the case that our analysis have not considered many services, including hospital level services and provision of free medicines, that can be perceived as more crucial to the survey respondents. While centre's distances can be more important for those services, the investigations on the services in this study remain valid and important for policy purposes.

Our previous analysis indicates that poor quality services in the health centres can be a reason to discourage women and children from taking those services. Earlier studies find a significant impact of the quality of service providers on the intake of health services. For example, hospital treatment

[11] Understandingly, the analysis rely on a much smaller sample.

practices impact the health service delivery and outcomes (Card et al., 2019). In particular, Card et al. (2019) find that proximity to hospitals with high c-section rates leads to more cesarean deliveries, fewer vaginal births after prolonged labour, and higher average Apgar scores. De Luca et al. (2021) find that increase in institutional quality significantly decrease cesarean section rates in Italy. Raut and Tanaka (2021) find improvements in the quality of healthcare services to lead to better health outcomes in conflict-intense areas in Nepal. The same has also been found in earlier studies on Community Clinics in Bangladesh (GoB, 2019; Hanifi et al., 2020).

Improving the quality of health care centres, including the Community Clinics, may thus improve the utilization of health care services in Bangladesh. The quality of the centres can depend on many factors like the availability of equipment and trained service providers as well as their monitoring and management. Thus the criticism that the Community Clinics in Bangladesh lack proper staff and monitoring needs to be addressed to improve the quality of service delivery and consequently raise the intake of health care services for women and children.

Making health centre of optimal size can also be useful. A school reform in Brazilian town of Sobral has been successful due to the selection of right candidates as managers (principal) and making the schools of optimal size. In particular, the city has merged small schools in outlying areas (where staff commonly taught children in several grades at once) with bigger ones so that students can learn from Sobral's best teachers at reduced costs (Loureiro et al., 2020). Policymakers in the health sector may also consider similar changes.

Mandatory provisions for some services can be another important mechanism to improve health care utilisation. Previous studies find mandatory vaccination to be associated with higher vaccination coverage in the USA, Australia and Europe (Orenstein and Hinman, 1999; Hull et al., 2018; Vaz et al., 2020). Orenstein and Hinman (1999) find school immunization laws to have a noteworthy effect on vaccine-preventable diseases in the school-aged populations in the United States. Hull et al. (2018) documented that Australian Government's 'No Jab No Pay' policy significantly raised MMR vaccine intake in the country.[12] Vaz et al. (2020) find that mandatory vaccination to be associated with lower measles incidence in European countries. Like mandatory infant and/or child immunization, compulsory intake of ANC and PNC services for women and vaccination and

[12]'No Jab No Pay' is a policy in which Australian government withholds the Child Care Benefit, the Child Care Rebate and a portion of the fortnightly Family Tax Benefit part A per child if children under 20 are neither fully immunised nor on a recognised catch-up schedule.

vitamin A for children can successfully increase the utilisation of those as well as other services. However, successful implementation of mandatory health service intake needs to be tailored to fit the country's cultural context (MacDonald et al., 2018).

4. Conclusion

We investigate how distances from the nearest health centres affect service intake for women and children in Bangladesh and whether the difference in service quality between Community Clinics and other types of health centres in the country affects health service intake. Using five rounds of nationally representative Bangladesh Demographic and Health Survey (BDHS) data and logistic regression technique, our investigation reveals that proximity to health centres marginally affects the country's intake of health services. The result, together with the fact that a small proportion of people lives far from health centres, implies that the newly established Community Clinics in the country do not significantly contribute to increasing the intake of health services offered by them, both in rural and as urban areas.

Our findings can contribute to the formulation/improvement of health policies in low-income settings by indicating that the proximity to potentially ill-managed/equipped health centres may not be enough to encourage the intake of health services. The low effectiveness of additional health centres asks for improved infrastructure and human resources in the health care centres, including the availability of equipment and trained service providers as well as their monitoring and management. The governments may also consider mandatory ANC and PNC visits and vaccination to boost their intake and thus bring better health outcomes to their countries.

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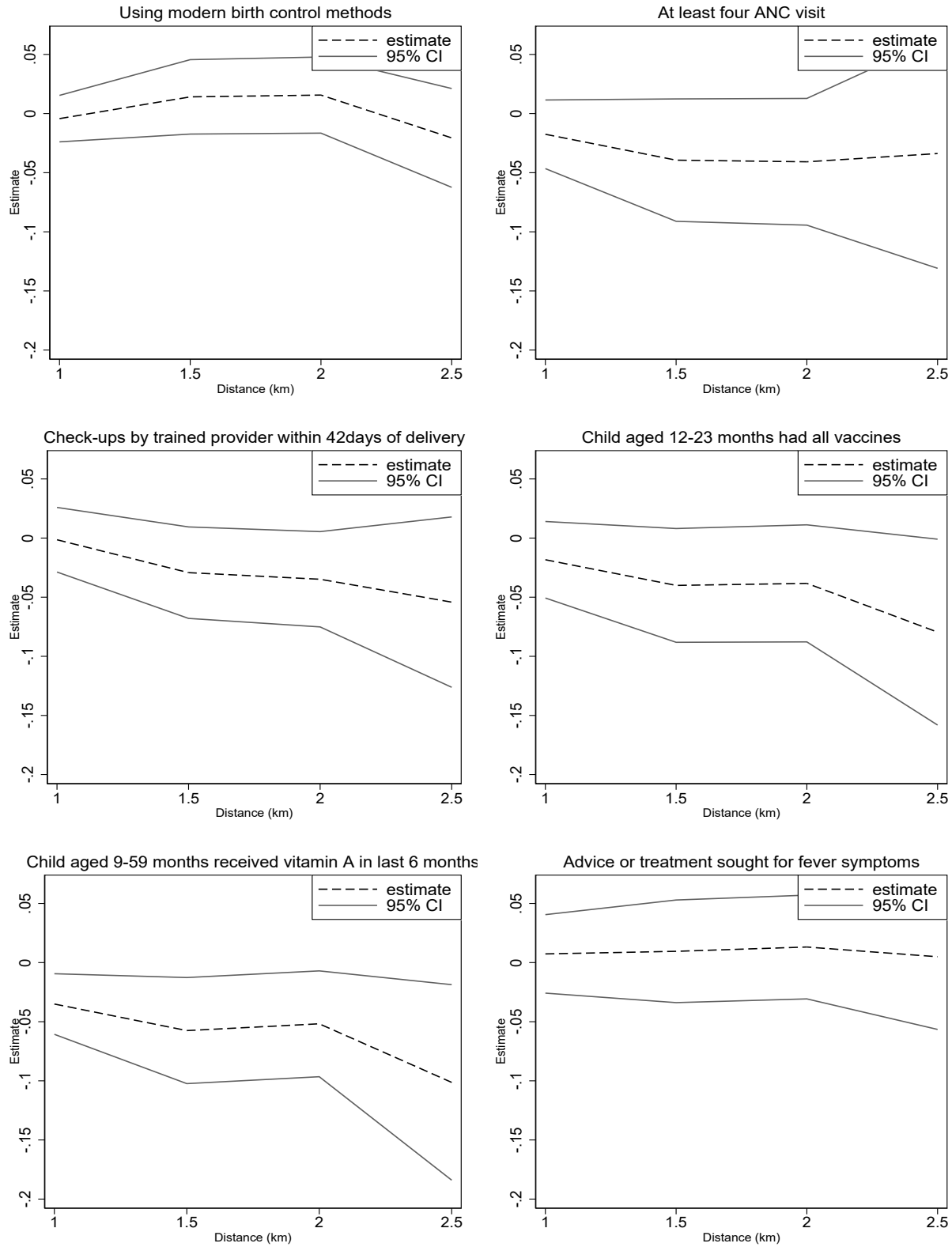

Figure 1: **Effect of distances as cutoff changes**

TABLE 1: **Trends in health service intake of women and children, 2004 to 2017**

Indicators	2004 (%)	2007 (%)	2011 (%)	2014 (%)	2017 (%)
a. Woman health-related service intake					
Using modern birth control methods					
All	47.29	47.46	52.05	54.06	51.90
Distance < 2km	47.27	47.47	52.11	54.01	51.77
Distance ≥ 2km	47.84	47.36	48.83	54.77	54.31
Difference	-0.57	0.11	3.27	-0.75	-2.55
	(3.91)	(4.61)	(3.81)	(3.08)	(2.44)
N	10,553	10,146	16,616	16,830	18,895
At least four ANC visit					
All	15.93	20.63	23.87	31.22	47.01
Distance < 2km	16.41	21.05	24.07	31.52	47.45
Distance ≥ 2km	4.60	16.37	12.97	25.97	39.21
Difference	11.81***	4.68	11.11*	5.55	8.24**
	(2.01)	(4.57)	(5.90)	(5.63)	(3.87)
N	5,363	4,920	7,307	4,488	5,012
Check-ups by trained provider within 42days of delivery					
All	17.98	22.48	31.89	40.09	53.52
Distance < 2km	18.38	22.87	32.31	39.89	54.32
Distance ≥ 2km	8.53	18.47	11.88	43.51	39.51
Difference	9.85***	4.40	20.43***	-3.62	14.81***
	(2.59)	(2.68)	(5.81)	(7.28)	(5.54)
N	5,363	4,904	6,187	4,466	5,009
b. Child health-related service intake					
Child aged 12-23 months had all vaccines					
All	68.95	79.08	83.89	80.90	85.69
Distance < 2km	69.81	80.07	84.10	81.13	85.46
Distance ≥ 2km	51.10	69.09	76.01	77.03	90.09
Difference	18.70	10.97**	8.09	4.11	-4.62
	(11.64)	(5.31)	(6.80)	(6.96)	(4.32)
N	1,266	1,157	1,560	1,584	1,656
Child aged 9-59 months received vitamin A in last 6 months					
All	82.16	89.19	61.92	64.24	81.33
Distance < 2km	82.45	89.69	61.96	64.78	81.36
Distance ≥ 2km	75.74	83.88	59.85	55.21	80.79
Difference	6.70	5.81**	2.10	9.57*	0.57
	(9.10)	(2.58)	(8.53)	(5.44)	(3.54)
N	4,100	3,874	5,856	5,583	6,028
Advice or treatment sought for fever symptoms					
All	18.86	24.62	27.51	32.73	27.29
Distance < 2km	18.91	24.64	27.49	32.65	27.51
Distance ≥ 2km	17.70	24.41	28.41	34.34	23.67
Difference	1.21	0.23	-0.92	-1.69	3.84
	(5.83)	(5.00)	(5.48)	(4.39)	(3.17)
N	2,143	1,847	2,739	2,518	2,504

Note: SE are reported in parentheses.
* p <0.10, ** p <0.05, *** p <0.01.

TABLE 2: **Variables employed to analyse the health service intake of women and children, 2004 to 2017**

	2004	2007	2011	2014	2017
Indicators	(%)	(%)	(%)	(%)	(%)
a. Characteristics used to analyze health service intake of women					
Proximity to health facility					
Distance < 2km	11,043(96.2)	10,158(91.2)	17,470(98.3)	17,069(94.5)	19,006(94.8)
Distance ≥ 2km	397(3.8)	838(8.8)	279(1.7)	794(5.5)	1,121(5.2)
Women's age group					
15-19 years	1,703(15.3)	1,348(13.0)	1,911(11.1)	2,023(11.4)	1,951(10.2)
20-24 years	2,202(19.2)	2,174(19.8)	3,456(19.8)	3,161(18.0)	3,514(17.7)
25-29 years	2,012(17.6)	1,935(17.6)	3,387(19.1)	3,343(19.0)	3,572(17.8)
30-34 years	1,783(15.7)	1,661(15.1)	2,690(15.0)	3,012(17.1)	3,462(17.2)
35-39 years	1,480(12.7)	1,596(14.2)	2,300(12.7)	2,340(13.0)	2,953(14.3)
40-44 years	1,185(10.1)	1,218(11.0)	2,157(12.1)	2,170(11.7)	2,329(11.4)
45-49 years	1,075(9.3)	1,064(9.4)	1,848(10.3)	1,814(9.9)	2,346(11.4)
Women's schooling					
No education	4,419(41.2)	3,528(34.1)	4,629(27.7)	4,206(24.9)	3,202(16.6)
Primary	3,381(29.4)	3,268(29.7)	5,296(30.0)	5,226(29.2)	6,340(31.2)
Secondary	2,949(24.4)	3,345(30.4)	6,359(35.0)	6,722(37.4)	7,764(39.6)
Partner's schooling					
No education	4,134(38.7)	3,608(35.6)	5,185(31.1)	5,065(29.1)	5,209(25.9)
Primary	2,903(25.7)	2,881(26.3)	4,792(27.1)	4,855(27.3)	5,923(30.2)
Secondary	2,947(24.5)	2,900(25.9)	5,140(28.2)	5,266(29.8)	5,579(28.2)
Household wealth					
Poorest	2,048(19.9)	1,775(19.2)	3,077(18.3)	3,251(18.8)	3,826(18.6)
Poorer	2,058(20.0)	1,995(19.6)	3,315(19.6)	3,360(19.1)	3,833(19.7)
Middle	2,147(19.8)	2,095(19.9)	3,403(20.1)	3,621(19.9)	3,883(20.2)
Richer	2,276(20.2)	2,201(20.5)	3,762(20.6)	3,769(21.0)	4,088(20.8)
Richest	2,911(20.1)	2,930(20.7)	4,192(21.3)	3,862(21.1)	4,497(20.8)
Urban/rural					
Urban	3,904(22.6)	4,151(22.6)	6,179(26.0)	6,167(28.3)	7,374(28.5)
Rural	7,536(77.4)	6,845(77.4)	11,570(74.0)	11,696(71.7)	12,753(71.5)
Division					
Barishal	1,360(6.3)	1,438(6.0)	2,050(5.6)	2,142(6.2)	2,154(5.6)
Chattogram	2,069(17.8)	1,943(18.4)	2,864(18.2)	2,865(18.5)	2,905(18.0)
Dhaka	2,589(31.2)	2,340(31.2)	3,062(32.3)	3,093(34.8)	2,974(25.5)
Khulna	1,708(12.2)	1,711(12.7)	2,640(12.0)	2,581(10.3)	2,630(11.6)
Rajshahi	2,564(26.2)	2,080(25.2)	2,590(14.9)	2,512(11.8)	2,167(7.7)
Rangpur	.(100.0)	.(100.0)	2,457(11.5)	2,531(11.5)	2,576(13.9)
Sylhet	1,150(6.3)	1,484(6.4)	2,086(5.4)	2,139(6.9)	2,492(11.8)
N	11,440	10,996	17,749	17,863	20,127

Continued on next page...

Table 2 (Continued)

Indicators	2004 (%)	2007 (%)	2011 (%)	2014 (%)	2017 (%)
b. Characteristics used to analyze health service intake of children					
Proximity to health facility					
Distance < 2km	5,162(96.0)	4,522(91.2)	7,206(98.2)	6,524(94.4)	7,078(94.8)
Distance ≥ 2km	204(4.0)	404(8.8)	108(1.8)	331(5.6)	433(5.2)
Mother's age group					
15-19 years	892(17.2)	749(16.3)	1,022(14.2)	1,055(15.6)	978(13.6)
20-24 years	1,736(32.5)	1,627(33.6)	2,543(35.4)	2,252(32.7)	2,497(33.1)
25-29 years	1,338(24.6)	1,250(25.3)	1,985(27.2)	1,879(27.6)	2,086(27.8)
30-34 years	837(15.4)	745(14.3)	1,076(14.2)	1,087(16.1)	1,294(17.0)
35-39 years	389(7.1)	394(7.5)	470(6.1)	445(6.2)	512(6.6)
40-44 years	126(2.3)	139(2.7)	182(2.5)	106(1.4)	123(1.5)
45-49 years	48(1.0)	22(0.4)	36(0.5)	31(0.4)	21(0.3)
Mother's schooling					
No education	1,866(36.9)	1,271(26.2)	1,330(19.2)	1,040(15.9)	523(7.1)
Primary	1,649(30.3)	1,507(30.9)	2,187(30.2)	1,871(27.6)	2,118(28.1)
Secondary	1,512(27.4)	1,742(36.2)	3,171(43.1)	3,189(46.7)	3,577(49.0)
Father's schooling					
No education	1,994(39.5)	1,588(34.2)	1,958(28.5)	1,694(25.4)	1,223(16.2)
Primary	1,433(26.9)	1,380(28.2)	2,120(28.9)	2,044(29.8)	2,453(32.9)
Secondary	1,335(23.9)	1,319(26.3)	2,191(29.4)	2,098(30.9)	2,398(32.9)
Household wealth					
Poorest	1,167(24.0)	937(21.8)	1,522(22.0)	1,435(21.3)	1,599(20.7)
Poorer	1,017(20.7)	988(21.3)	1,395(20.0)	1,295(18.9)	1,458(19.6)
Middle	990(19.5)	910(19.0)	1,408(19.8)	1,332(19.6)	1,357(19.1)
Richer	989(18.4)	943(19.5)	1,472(19.7)	1,412(20.3)	1,525(20.7)
Richest	1,203(17.4)	1,148(18.4)	1,517(18.5)	1,381(19.8)	1,572(19.9)
Urban/rural					
Urban	1,684(20.7)	1,748(21.2)	2,326(23.4)	2,215(26.2)	2,681(28.2)
Rural	3,682(79.3)	3,178(78.8)	4,988(76.6)	4,640(73.8)	4,830(71.8)
Division					
Barishal	615(6.1)	658(6.4)	855(5.8)	814(5.9)	785(5.6)
Chattogram	1,109(20.6)	980(21.0)	1,392(21.6)	1,284(21.0)	1,218(20.3)
Dhaka	1,192(31.0)	1,051(31.7)	1,226(31.5)	1,222(35.6)	1,151(26.4)
Khulna	728(11.2)	623(10.3)	876(9.7)	778(7.9)	822(9.6)
Rajshahi	1,085(23.7)	829(22.8)	946(13.6)	856(10.5)	861(8.1)
Rangpur	.(100.0)	.(100.0)	960(10.9)	876(10.2)	823(12.1)
Sylhet	637(7.4)	785(7.8)	1,059(6.9)	1,025(9.0)	862(10.8)
Sex of child					
Male	2,731(51.0)	2,515(50.5)	3,786(51.7)	3,576(52.8)	3,947(52.7)
Female	2,635(49.0)	2,411(49.5)	3,528(48.3)	3,279(47.2)	3,564(47.3)
Child's age (month)					
<12	1,320(24.5)	1,151(23.2)	1,690(23.3)	1,494(22.1)	1,755(23.1)
12-23	1,266(23.8)	1,157(23.5)	1,560(21.1)	1,584(23.7)	1,656(22.1)
24-59	2,780(51.7)	2,618(53.2)	4,064(55.6)	3,777(54.2)	4,100(54.8)
N	5,366	4,926	7,314	6,855	7,511

Note: 1. Number of observations in each groups are reported. Proportions are reported in parentheses.

TABLE 3: **Risk factors related to woman and child health**

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
Proximity to health facility												
Distance $\geq$ 2km	0.015	0.016	-0.032	-0.041	-0.024*	-0.035*	-0.043	-0.038	-0.047**	-0.052**	0.013	0.013
	(0.015)	(0.016)	(0.020)	(0.027)	(0.014)	(0.021)	(0.031)	(0.025)	(0.023)	(0.023)	(0.021)	(0.022)
Woman's/mother's age group												
15-19 years	-0.173***	-0.178***	0.002	0.003	0.018*	0.022*	-0.039**	-0.037**	-0.064***	-0.061***	0.000	0.000
	(0.008)	(0.009)	(0.010)	(0.011)	(0.009)	(0.011)	(0.016)	(0.015)	(0.012)	(0.012)	(0.015)	(0.015)
20-24 years	-0.069***	-0.071***	0.002	0.003	-0.003	-0.002	-0.015	-0.015	-0.022**	-0.022**	0.000	0.001
	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.009)	(0.013)	(0.014)	(0.009)	(0.010)	(0.012)	(0.012)
30-34 years	0.026***	0.028***	-0.001	-0.001	-0.008	-0.010	0.004	0.004	0.007	0.008	-0.007	-0.006
	(0.007)	(0.008)	(0.010)	(0.012)	(0.009)	(0.012)	(0.019)	(0.019)	(0.010)	(0.011)	(0.014)	(0.014)
35-39 years	-0.000	-0.000	-0.013	-0.015	0.003	0.010	0.021	0.016	0.004	0.004	-0.049**	-0.054**
	(0.008)	(0.008)	(0.014)	(0.019)	(0.011)	(0.016)	(0.024)	(0.023)	(0.012)	(0.013)	(0.019)	(0.023)
40-44 years	-0.137***	-0.141***	-0.022	-0.046*	-0.021	-0.041	-0.041	-0.036	-0.019	-0.017	-0.058**	-0.079*
	(0.008)	(0.009)	(0.014)	(0.026)	(0.016)	(0.030)	(0.047)	(0.037)	(0.022)	(0.022)	(0.028)	(0.041)
45-49 years	-0.295***	-0.316***	-0.059**	-0.171**	-0.015	-0.039	-0.340**	-0.216**	-0.080*	-0.074**	-0.047	-0.064
	(0.009)	(0.011)	(0.026)	(0.087)	(0.036)	(0.076)	(0.137)	(0.091)	(0.041)	(0.036)	(0.058)	(0.081)
Woman's/mother's schooling												
Primary	0.013**	0.014**	0.036***	0.091***	0.018**	0.063***	0.069***	0.046***	0.025**	0.026**	0.008	0.015
	(0.006)	(0.007)	(0.007)	(0.012)	(0.008)	(0.013)	(0.020)	(0.015)	(0.013)	(0.012)	(0.014)	(0.017)
Secondary	0.022***	0.023***	0.121***	0.173***	0.117***	0.164***	0.134***	0.111***	0.061***	0.061***	0.033**	0.040**
	(0.007)	(0.008)	(0.009)	(0.012)	(0.010)	(0.014)	(0.020)	(0.017)	(0.013)	(0.013)	(0.017)	(0.019)
Higher	0.003	0.004	0.249***	0.262***	0.266***	0.313***	0.156***	0.161***	0.073***	0.078***	0.125***	0.113***
	(0.011)	(0.012)	(0.015)	(0.016)	(0.015)	(0.019)	(0.025)	(0.031)	(0.017)	(0.019)	(0.027)	(0.024)
Partner's/father's schooling												
Primary	-0.002	-0.002	0.012*	0.027***	0.006	0.018	0.052***	0.041***	0.022*	0.022*	0.010	0.013
	(0.006)	(0.006)	(0.007)	(0.010)	(0.008)	(0.012)	(0.018)	(0.015)	(0.012)	(0.011)	(0.013)	(0.015)
Secondary	-0.028***	-0.030***	0.057***	0.069***	0.060***	0.071***	0.037**	0.027*	0.024**	0.025**	0.042***	0.043***
	(0.007)	(0.007)	(0.010)	(0.012)	(0.009)	(0.012)	(0.018)	(0.016)	(0.011)	(0.010)	(0.015)	(0.016)
Higher	-0.023**	-0.024**	0.148***	0.136***	0.166***	0.175***	0.071***	0.087***	0.049***	0.053***	0.017	0.020
	(0.010)	(0.011)	(0.014)	(0.013)	(0.014)	(0.015)	(0.023)	(0.028)	(0.014)	(0.015)	(0.022)	(0.021)
Household wealth												
Poorer	0.004	0.004	0.006	0.017	0.031***	0.060***	0.055***	0.044***	0.008	0.007	0.013	0.018

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Table 3 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
	(0.008)	(0.008)	(0.007)	(0.012)	(0.008)	(0.014)	(0.019)	(0.016)	(0.010)	(0.010)	(0.012)	(0.016)
Middle	-0.006	-0.007	0.036***	0.060***	0.070***	0.112***	0.062***	0.050***	0.009	0.007	0.054***	0.064***
	(0.008)	(0.009)	(0.009)	(0.012)	(0.011)	(0.015)	(0.020)	(0.016)	(0.012)	(0.012)	(0.018)	(0.020)
Richer	-0.010	-0.011	0.084***	0.108***	0.148***	0.194***	0.072***	0.061***	0.008	0.008	0.081***	0.089***
	(0.008)	(0.009)	(0.011)	(0.013)	(0.012)	(0.015)	(0.020)	(0.019)	(0.012)	(0.012)	(0.016)	(0.017)
Richest	-0.025***	-0.026***	0.210***	0.206***	0.290***	0.330***	0.093***	0.088***	0.028**	0.030**	0.152***	0.147***
	(0.010)	(0.010)	(0.013)	(0.014)	(0.013)	(0.016)	(0.022)	(0.023)	(0.013)	(0.014)	(0.019)	(0.019)
Urban/rural												
Rural	-0.060***	-0.064***	-0.091***	-0.090***	-0.077***	-0.089***	0.009	0.009	0.003	0.004	-0.083***	-0.078***
	(0.006)	(0.007)	(0.010)	(0.009)	(0.009)	(0.010)	(0.013)	(0.013)	(0.012)	(0.012)	(0.014)	(0.012)
Division												
Barishal	0.010	0.010	-0.005	-0.003	0.004	0.009	0.003	0.002	0.037**	0.038**	0.032*	0.035*
	(0.011)	(0.011)	(0.013)	(0.015)	(0.012)	(0.016)	(0.021)	(0.020)	(0.017)	(0.017)	(0.019)	(0.020)
Chattogram	-0.070***	-0.073***	-0.049***	-0.054***	-0.008	-0.008	-0.022	-0.021	0.058***	0.060***	0.022	0.024
	(0.009)	(0.010)	(0.013)	(0.016)	(0.011)	(0.014)	(0.017)	(0.016)	(0.015)	(0.015)	(0.016)	(0.016)
Khulna	0.043***	0.046***	0.037***	0.042***	0.100***	0.120***	0.048***	0.055***	0.022	0.022	0.052***	0.054***
	(0.009)	(0.009)	(0.012)	(0.012)	(0.013)	(0.014)	(0.016)	(0.019)	(0.016)	(0.017)	(0.019)	(0.019)
Rajshahi	0.090***	0.095***	0.031**	0.039***	0.020*	0.027*	0.042**	0.040**	0.052***	0.053***	-0.010	-0.013
	(0.009)	(0.010)	(0.012)	(0.015)	(0.011)	(0.015)	(0.019)	(0.019)	(0.014)	(0.015)	(0.016)	(0.018)
Rangpur	0.080***	0.084***	0.111***	0.112***	0.048***	0.061***	0.066***	0.080***	0.021	0.023	0.040*	0.043**
	(0.011)	(0.012)	(0.020)	(0.019)	(0.016)	(0.018)	(0.019)	(0.025)	(0.021)	(0.019)	(0.022)	(0.022)
Sylhet	-0.071***	-0.075***	0.018	0.028*	0.011	0.023	-0.067***	-0.055***	0.047***	0.048***	0.054***	0.059***
	(0.012)	(0.013)	(0.013)	(0.015)	(0.014)	(0.018)	(0.022)	(0.017)	(0.018)	(0.018)	(0.020)	(0.020)
BDHS wave												
2007 wave	-0.001	-0.001	0.028**	0.042**	0.026**	0.045***	0.078***	0.062***	0.065***	0.102***	0.048***	0.057***
	(0.011)	(0.011)	(0.012)	(0.017)	(0.010)	(0.016)	(0.023)	(0.019)	(0.011)	(0.016)	(0.016)	(0.019)
2011 wave	0.045***	0.047***	0.032***	0.048***	0.097***	0.139***	0.107***	0.092***	-0.215***	-0.205***	0.072***	0.081***
	(0.009)	(0.010)	(0.010)	(0.014)	(0.010)	(0.014)	(0.021)	(0.018)	(0.015)	(0.014)	(0.015)	(0.018)
2014 wave	0.066***	0.070***	0.088***	0.108***	0.160***	0.210***	0.075***	0.058***	-0.191***	-0.186***	0.109***	0.116***
	(0.010)	(0.011)	(0.015)	(0.018)	(0.013)	(0.016)	(0.022)	(0.018)	(0.016)	(0.015)	(0.019)	(0.020)
2017 wave	0.050***	0.053***	0.218***	0.221***	0.265***	0.316***	0.103***	0.088***	-0.033***	-0.036**	0.040**	0.049***
	(0.010)	(0.010)	(0.013)	(0.014)	(0.012)	(0.015)	(0.021)	(0.019)	(0.012)	(0.014)	(0.016)	(0.018)

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Table 3 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
Sex of child												
Female							0.003	0.002	0.002	0.002	-0.039***	-0.040***
							(0.010)	(0.010)	(0.006)	(0.006)	(0.009)	(0.009)
Child's age (month)												
<12							0.000	0.000	-0.202***	-0.179***	0.057***	0.058***
							(.)	(.)	(0.015)	(0.013)	(0.013)	(0.013)
12-23							0.000	0.000	-0.024***	-0.026***	0.039***	0.040***
							(.)	(.)	(0.008)	(0.008)	(0.011)	(0.012)
Constant	0.588***		0.083***		0.045***		0.546***		0.770***		0.158***	
	(0.013)		(0.014)		(0.012)		(0.033)		(0.017)		(0.023)	
R^2	0.06		0.22		0.27		0.08		0.09		0.07	
Pseudo-R^2		0.04		0.20		0.23		0.07		0.07		0.06
N	73,040	73,040	27,090	27,090	25,929	25,929	7,223	7,223	25,441	25,441	11,751	11,751

Note: 1. Marginal effects from logit models are reported; SEs are reported in parentheses. Stata svyset command has been used to adjust for the implication of the survey designs, such as the sampling units and weights, on the estimates and their SEs.

2. The reference groups for the analysis of woman health service intake are women living within two kilometres of any health centres, belong to the lowest SES group, has no education both for herself and her partner, located in the urban areas and in Dhaka division, aged 25-29 years and surveyed in the 2004 round of BDHS.

3. The reference groups for the analysis of child health service intake are boys older than two years, have uneducated parents, belong to the lowest SES group, lives within two kilometres from any health centres, in the urban areas and in Dhaka division, whose mother's age is 25-29 years and are surveyed during the 2004 round of BDHS.

TABLE 4: **Risk factors related to woman and child health**

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	Urban (1)	Rural (2)	Urban (3)	Rural (4)	Urban (5)	Rural (6)	Urban (7)	Rural (8)	Urban (9)	Rural (10)	Urban (11)	Rural (12)
Proximity to health facility												
Distance $\geq$ 2km	0.024	0.013	-0.050	-0.038	-0.052	-0.027	-0.021	-0.042	0.052	-0.065**	-0.014	0.017
	(0.025)	(0.019)	(0.063)	(0.026)	(0.050)	(0.019)	(0.037)	(0.029)	(0.035)	(0.025)	(0.053)	(0.023)
Woman's/mother's age group												
15-19 years	-0.140***	-0.189***	0.029	-0.001	0.017	0.023**	-0.028	-0.039**	-0.064***	-0.060***	-0.033	0.011
	(0.016)	(0.010)	(0.025)	(0.011)	(0.025)	(0.011)	(0.027)	(0.019)	(0.018)	(0.014)	(0.036)	(0.017)
20-24 years	-0.063***	-0.075***	0.028	-0.001	-0.023	0.006	-0.011	-0.015	-0.009	-0.026**	-0.005	0.004
	(0.013)	(0.010)	(0.017)	(0.009)	(0.020)	(0.009)	(0.023)	(0.017)	(0.015)	(0.012)	(0.026)	(0.014)
30-34 years	0.001	0.038***	0.038*	-0.012	0.004	-0.014	-0.031	0.018	-0.020	0.018	-0.023	-0.001
	(0.014)	(0.010)	(0.023)	(0.013)	(0.025)	(0.013)	(0.030)	(0.022)	(0.017)	(0.013)	(0.030)	(0.016)
35-39 years	-0.034**	0.014	0.016	-0.027	0.037	-0.000	-0.035	0.031	0.002	0.004	-0.102**	-0.043*
	(0.013)	(0.010)	(0.029)	(0.022)	(0.035)	(0.017)	(0.039)	(0.027)	(0.025)	(0.015)	(0.048)	(0.026)
40-44 years	-0.169***	-0.128***	0.076	-0.084***	0.046	-0.063*	0.081	-0.082*	0.009	-0.025	-0.035	-0.093**
	(0.014)	(0.011)	(0.063)	(0.031)	(0.063)	(0.034)	(0.066)	(0.050)	(0.042)	(0.025)	(0.094)	(0.047)
45-49 years	-0.366***	-0.294***	-0.364*	-0.114	-0.129	-0.015	-0.302**	-0.187*	0.254*	-0.099**	0.180	-0.115
	(0.016)	(0.013)	(0.217)	(0.082)	(0.212)	(0.063)	(0.137)	(0.102)	(0.133)	(0.038)	(0.196)	(0.087)
Woman's/mother's schooling												
Primary	0.009	0.017**	0.095***	0.080***	0.054**	0.058***	0.045*	0.046**	0.016	0.028**	0.032	0.007
	(0.014)	(0.008)	(0.027)	(0.013)	(0.026)	(0.014)	(0.024)	(0.018)	(0.022)	(0.014)	(0.036)	(0.017)
Secondary	0.013	0.033***	0.231***	0.141***	0.225***	0.130***	0.121***	0.105***	0.057**	0.062***	0.102***	0.017
	(0.015)	(0.009)	(0.027)	(0.012)	(0.029)	(0.015)	(0.028)	(0.020)	(0.023)	(0.014)	(0.036)	(0.021)
Higher	0.005	0.011	0.394***	0.198***	0.433***	0.242***	0.161***	0.161***	0.081**	0.076***	0.218***	0.062**
	(0.019)	(0.016)	(0.035)	(0.017)	(0.040)	(0.020)	(0.037)	(0.043)	(0.032)	(0.024)	(0.048)	(0.029)
Partner's/father's schooling												
Primary	-0.012	0.000	0.042	0.022**	0.008	0.020*	0.051**	0.038**	0.030*	0.020	0.050	0.004
	(0.012)	(0.007)	(0.027)	(0.010)	(0.026)	(0.012)	(0.021)	(0.017)	(0.017)	(0.013)	(0.035)	(0.015)
Secondary	-0.052***	-0.024***	0.109***	0.054***	0.079***	0.062***	0.020	0.027	0.037*	0.020*	0.051	0.042***
	(0.013)	(0.009)	(0.026)	(0.012)	(0.026)	(0.012)	(0.025)	(0.019)	(0.019)	(0.012)	(0.037)	(0.016)
Higher	-0.052***	-0.011	0.224***	0.103***	0.237***	0.141***	0.080**	0.083**	0.059**	0.052***	0.081*	-0.004
	(0.018)	(0.013)	(0.033)	(0.013)	(0.036)	(0.015)	(0.036)	(0.037)	(0.027)	(0.017)	(0.043)	(0.025)
Household wealth												
Poorer	0.015	0.001	0.047	0.015	0.194***	0.043***	0.032	0.047***	-0.003	0.008	0.088*	0.014

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Table 4 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	Urban (1)	Rural (2)	Urban (3)	Rural (4)	Urban (5)	Rural (6)	Urban (7)	Rural (8)	Urban (9)	Rural (10)	Urban (11)	Rural (12)
	(0.019)	(0.009)	(0.035)	(0.010)	(0.042)	(0.013)	(0.034)	(0.017)	(0.026)	(0.011)	(0.047)	(0.016)
Middle	0.010	-0.012	0.083**	0.058***	0.212***	0.094***	0.005	0.062***	-0.026	0.011	0.118***	0.063***
	(0.018)	(0.009)	(0.034)	(0.011)	(0.040)	(0.014)	(0.034)	(0.019)	(0.023)	(0.013)	(0.044)	(0.020)
Richer	0.012	-0.016	0.147***	0.108***	0.304***	0.170***	0.005	0.084***	-0.039	0.018	0.167***	0.090***
	(0.017)	(0.010)	(0.034)	(0.013)	(0.037)	(0.015)	(0.031)	(0.024)	(0.027)	(0.015)	(0.041)	(0.019)
Richest	0.018	-0.052***	0.330***	0.155***	0.486***	0.267***	0.025	0.120***	-0.016	0.046***	0.223***	0.136***
	(0.017)	(0.013)	(0.037)	(0.014)	(0.037)	(0.017)	(0.032)	(0.034)	(0.030)	(0.016)	(0.040)	(0.023)
Division												
Barishal	0.013	0.011	-0.041	0.008	0.080*	-0.000	-0.048	0.010	0.073**	0.030	0.105**	0.021
	(0.014)	(0.014)	(0.032)	(0.016)	(0.044)	(0.015)	(0.041)	(0.024)	(0.037)	(0.020)	(0.045)	(0.021)
Chattogram	-0.027*	-0.089***	-0.044	-0.048***	-0.041*	0.006	-0.011	-0.029	0.052**	0.057***	0.044	0.019
	(0.014)	(0.012)	(0.028)	(0.018)	(0.024)	(0.016)	(0.023)	(0.021)	(0.023)	(0.019)	(0.030)	(0.018)
Khulna	0.008	0.058***	0.100***	0.032**	0.130***	0.109***	0.057*	0.049**	0.018	0.019	0.064**	0.047**
	(0.013)	(0.011)	(0.026)	(0.014)	(0.029)	(0.014)	(0.031)	(0.024)	(0.030)	(0.020)	(0.032)	(0.022)
Rajshahi	0.066***	0.103***	-0.004	0.046***	0.028	0.027*	0.082***	0.035	0.046*	0.054***	0.004	-0.014
	(0.013)	(0.012)	(0.027)	(0.015)	(0.029)	(0.015)	(0.030)	(0.022)	(0.026)	(0.018)	(0.031)	(0.020)
Rangpur	0.047***	0.092***	0.158***	0.094***	0.113**	0.051***	-0.013	0.103***	0.019	0.020	0.114***	0.027
	(0.018)	(0.014)	(0.042)	(0.019)	(0.047)	(0.017)	(0.034)	(0.030)	(0.026)	(0.023)	(0.039)	(0.024)
Sylhet	-0.058***	-0.076***	0.001	0.031**	0.028	0.022	-0.036	-0.065***	0.017	0.051**	0.027	0.056**
	(0.016)	(0.016)	(0.030)	(0.015)	(0.033)	(0.018)	(0.023)	(0.021)	(0.027)	(0.022)	(0.040)	(0.023)
BDHS wave												
2007 wave	0.006	-0.004	0.020	0.046***	0.040	0.043**	0.046	0.067***	0.087***	0.104***	0.031	0.066***
	(0.017)	(0.014)	(0.034)	(0.018)	(0.032)	(0.017)	(0.032)	(0.023)	(0.031)	(0.019)	(0.038)	(0.021)
2011 wave	0.032**	0.051***	0.045	0.050***	0.171***	0.120***	0.024	0.114***	-0.254***	-0.191***	0.028	0.096***
	(0.016)	(0.012)	(0.029)	(0.015)	(0.030)	(0.015)	(0.028)	(0.022)	(0.029)	(0.017)	(0.038)	(0.019)
2014 wave	0.056***	0.072***	0.068**	0.117***	0.254***	0.182***	0.015	0.071***	-0.196***	-0.186***	0.075*	0.128***
	(0.017)	(0.014)	(0.033)	(0.019)	(0.030)	(0.017)	(0.027)	(0.022)	(0.027)	(0.018)	(0.038)	(0.022)
2017 wave	0.041**	0.054***	0.215***	0.213***	0.347***	0.282***	0.019	0.115***	-0.080***	-0.023	-0.063	0.085***
	(0.017)	(0.013)	(0.030)	(0.015)	(0.029)	(0.015)	(0.027)	(0.024)	(0.028)	(0.017)	(0.039)	(0.020)
Sex of child												
Female							-0.017	0.008	0.000	0.002	-0.025	-0.044***
							(0.017)	(0.012)	(0.011)	(0.007)	(0.019)	(0.011)

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Table 4 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Child's age (month)												
<12							0.000	0.000	-0.171***	-0.182***	0.093***	0.048***
							(.)	(.)	(0.025)	(0.014)	(0.026)	(0.015)
12-23							0.000	0.000	-0.017	-0.028***	0.084***	0.027**
							(.)	(.)	(0.014)	(0.009)	(0.024)	(0.013)
Pseudo-R^2	0.04	0.05	0.18	0.16	0.24	0.18	0.07	0.08	0.08	0.07	0.06	0.04
N	25,753	47,287	8,924	18,166	8,589	17,340	2,398	4,825	8,519	16,922	3,704	8,047

Note: See the footnotes of Table 3.

TABLE 5: **Predicted service intake in 2017 with and without the Community Clinics**

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
With community clinics (A)	51.73	41.78	50.15	85.53	78.34	27.58
Without community clinics (B)	51.75	41.73	50.10	85.49	78.27	27.59
Difference (A-B)	-0.02	0.06	0.04	0.04	0.06	-0.01

TABLE 6: **Proportion of people living further than two kilometres of any health care centre**

Survey Round	with CCs (%)	without CCs (%)
2004	4.11	4.41
2007	9.07	10.16
2011	1.88	3.21
2014	5.63	8.08
2017	5.48	6.93
Total	5.00	6.40

TABLE 7: **Risk factors related to women and child health**
(Repeats Table 3 on observations with nearest health centre being Community Clinic)

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
Proximity to health facility						
Distance $\geq$ 2km	0.015	-0.044*	-0.043*	-0.042*	-0.052**	0.011
	(0.017)	(0.026)	(0.023)	(0.025)	(0.023)	(0.023)
Woman's/mother's age group						
15-19 years	-0.177***	0.004	0.023**	-0.036**	-0.061***	0.000
	(0.009)	(0.011)	(0.011)	(0.016)	(0.012)	(0.016)
20-24 years	-0.070***	0.003	-0.001	-0.016	-0.022**	-0.002
	(0.008)	(0.008)	(0.009)	(0.014)	(0.010)	(0.012)
30-34 years	0.027***	-0.000	-0.010	0.001	0.009	-0.006
	(0.008)	(0.012)	(0.012)	(0.019)	(0.011)	(0.014)
35-39 years	-0.000	-0.014	0.010	0.016	0.007	-0.055**
	(0.009)	(0.019)	(0.016)	(0.023)	(0.013)	(0.023)
40-44 years	-0.140***	-0.044*	-0.045	-0.037	-0.018	-0.097**
	(0.009)	(0.026)	(0.030)	(0.037)	(0.022)	(0.042)
45-49 years	-0.314***	-0.169*	-0.048	-0.217**	-0.079**	-0.063
	(0.011)	(0.088)	(0.078)	(0.090)	(0.036)	(0.081)
Woman's/mother's schooling						
Primary	0.014**	0.091***	0.061***	0.044***	0.025*	0.014
	(0.007)	(0.012)	(0.014)	(0.015)	(0.013)	(0.017)
Secondary	0.024***	0.171***	0.164***	0.112***	0.061***	0.040**
	(0.008)	(0.012)	(0.014)	(0.017)	(0.013)	(0.019)
Higher	0.003	0.259***	0.315***	0.160***	0.077***	0.112***
	(0.012)	(0.016)	(0.019)	(0.031)	(0.019)	(0.025)
Partner's/father's schooling						
Primary	-0.002	0.030***	0.017	0.041***	0.022*	0.010
	(0.006)	(0.010)	(0.012)	(0.015)	(0.012)	(0.015)
Secondary	-0.029***	0.072***	0.069***	0.024	0.024**	0.042***
	(0.007)	(0.012)	(0.012)	(0.016)	(0.010)	(0.016)
Higher	-0.026**	0.139***	0.173***	0.086***	0.054***	0.021
	(0.011)	(0.013)	(0.015)	(0.028)	(0.015)	(0.022)
Household wealth						
Poorer	0.007	0.016	0.060***	0.046***	0.006	0.020
	(0.008)	(0.012)	(0.014)	(0.016)	(0.010)	(0.016)
Middle	-0.006	0.059***	0.111***	0.050***	0.005	0.062***
	(0.009)	(0.012)	(0.015)	(0.017)	(0.012)	(0.020)
Richer	-0.010	0.106***	0.192***	0.059***	0.004	0.087***
	(0.009)	(0.013)	(0.015)	(0.019)	(0.013)	(0.017)
Richest	-0.025**	0.206***	0.328***	0.087***	0.027*	0.146***
	(0.010)	(0.014)	(0.016)	(0.023)	(0.014)	(0.019)

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Table 7 (Continued)

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
Urban/rural						
Rural	-0.064***	-0.090***	-0.090***	0.009	0.003	-0.080***
	(0.007)	(0.009)	(0.010)	(0.013)	(0.012)	(0.012)
Division						
Barishal	0.009	0.001	0.012	0.004	0.044**	0.037*
	(0.012)	(0.016)	(0.016)	(0.021)	(0.018)	(0.020)
Chattogram	-0.074***	-0.056***	-0.009	-0.020	0.060***	0.026
	(0.010)	(0.016)	(0.014)	(0.017)	(0.015)	(0.016)
Khulna	0.044***	0.042***	0.119***	0.063***	0.020	0.057***
	(0.009)	(0.013)	(0.015)	(0.020)	(0.017)	(0.019)
Rajshahi	0.095***	0.039***	0.026*	0.041**	0.053***	-0.009
	(0.010)	(0.015)	(0.015)	(0.019)	(0.015)	(0.018)
Rangpur	0.081***	0.115***	0.062***	0.079***	0.019	0.048**
	(0.012)	(0.020)	(0.018)	(0.026)	(0.019)	(0.022)
Sylhet	-0.074***	0.029*	0.023	-0.052***	0.043**	0.061***
	(0.014)	(0.015)	(0.018)	(0.018)	(0.018)	(0.020)
BDHS wave						
2007 wave	0.000	0.041**	0.046***	0.065***	0.104***	0.057***
	(0.011)	(0.017)	(0.016)	(0.019)	(0.017)	(0.019)
2011 wave	0.049***	0.048***	0.138***	0.093***	-0.204***	0.082***
	(0.010)	(0.014)	(0.014)	(0.018)	(0.014)	(0.018)
2014 wave	0.070***	0.110***	0.208***	0.060***	-0.186***	0.118***
	(0.011)	(0.018)	(0.016)	(0.018)	(0.016)	(0.020)
2017 wave	0.055***	0.224***	0.316***	0.090***	-0.032**	0.048***
	(0.010)	(0.014)	(0.015)	(0.019)	(0.015)	(0.018)
Sex of child						
Female				0.002	0.002	-0.039***
				(0.010)	(0.006)	(0.010)
Child's age (month)						
<12					-0.180***	0.059***
					(0.013)	(0.014)
12-23					-0.024***	0.041***
					(0.008)	(0.012)
Pseudo-R^2	0.04	0.20	0.24	0.08	0.07	0.06
N	71,347	26,523	25,394	7,046	24,858	11,467

Note: See the footnotes of Table 3.

TABLE 8: **Risk factors related to woman and child health**
(Repeats Table 4 with distances from health care centres other than Community Clinics)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Proximity to health facility												
Distance $\geq$ 2km	0.024	0.012	-0.050	-0.040*	-0.052	-0.035	-0.021	-0.046	0.052	-0.066**	-0.014	0.015
	(0.025)	(0.019)	(0.063)	(0.024)	(0.050)	(0.022)	(0.037)	(0.029)	(0.035)	(0.026)	(0.053)	(0.024)
Woman's/mother's age group												
15-19 years	-0.139***	-0.189***	0.029	-0.001	0.016	0.025**	-0.028	-0.037*	-0.064***	-0.059***	-0.034	0.011
	(0.016)	(0.011)	(0.025)	(0.011)	(0.025)	(0.011)	(0.027)	(0.019)	(0.018)	(0.014)	(0.036)	(0.017)
20-24 years	-0.062***	-0.074***	0.028	-0.001	-0.023	0.006	-0.012	-0.017	-0.010	-0.026**	-0.005	0.000
	(0.013)	(0.010)	(0.017)	(0.009)	(0.020)	(0.010)	(0.023)	(0.017)	(0.015)	(0.012)	(0.026)	(0.014)
30-34 years	0.001	0.037***	0.038*	-0.012	0.003	-0.013	-0.031	0.015	-0.019	0.019	-0.023	-0.001
	(0.014)	(0.010)	(0.023)	(0.013)	(0.025)	(0.013)	(0.030)	(0.023)	(0.017)	(0.013)	(0.030)	(0.016)
35-39 years	-0.032**	0.013	0.018	-0.026	0.036	-0.001	-0.035	0.032	0.001	0.008	-0.106**	-0.043
	(0.013)	(0.010)	(0.029)	(0.022)	(0.035)	(0.017)	(0.039)	(0.028)	(0.025)	(0.015)	(0.048)	(0.026)
40-44 years	-0.169***	-0.126***	0.076	-0.081**	0.046	-0.068*	0.081	-0.084*	0.009	-0.025	-0.035	-0.117**
	(0.014)	(0.011)	(0.063)	(0.032)	(0.063)	(0.035)	(0.066)	(0.050)	(0.042)	(0.025)	(0.094)	(0.049)
45-49 years	-0.365***	-0.292***	-0.364*	-0.110	-0.129	-0.024	-0.302**	-0.189*	0.254*	-0.104***	0.180	-0.114
	(0.016)	(0.014)	(0.216)	(0.082)	(0.212)	(0.065)	(0.137)	(0.101)	(0.133)	(0.039)	(0.196)	(0.087)
Woman's/mother's schooling												
Primary	0.009	0.017**	0.095***	0.079***	0.054**	0.056***	0.045*	0.043**	0.016	0.027*	0.033	0.005
	(0.014)	(0.008)	(0.027)	(0.013)	(0.026)	(0.015)	(0.024)	(0.019)	(0.022)	(0.014)	(0.036)	(0.017)
Secondary	0.014	0.033***	0.231***	0.139***	0.225***	0.129***	0.122***	0.106***	0.057**	0.062***	0.103***	0.016
	(0.015)	(0.010)	(0.027)	(0.012)	(0.029)	(0.015)	(0.028)	(0.021)	(0.023)	(0.015)	(0.036)	(0.021)
Higher	0.005	0.009	0.393***	0.193***	0.435***	0.242***	0.162***	0.160***	0.080**	0.075***	0.219***	0.059**
	(0.019)	(0.016)	(0.035)	(0.017)	(0.041)	(0.020)	(0.037)	(0.044)	(0.032)	(0.024)	(0.048)	(0.029)
Partner's/father's schooling												
Primary	-0.012	0.001	0.043	0.025**	0.008	0.018	0.051**	0.039**	0.030*	0.020	0.052	0.000
	(0.012)	(0.007)	(0.027)	(0.010)	(0.026)	(0.012)	(0.021)	(0.018)	(0.017)	(0.014)	(0.035)	(0.016)
Secondary	-0.052***	-0.022**	0.110***	0.057***	0.079***	0.061***	0.020	0.024	0.038**	0.020	0.052	0.042**
	(0.013)	(0.009)	(0.026)	(0.012)	(0.026)	(0.012)	(0.025)	(0.020)	(0.019)	(0.012)	(0.037)	(0.016)
Higher	-0.052***	-0.014	0.224***	0.105***	0.238***	0.137***	0.080**	0.083**	0.059**	0.053***	0.084**	-0.003
	(0.018)	(0.013)	(0.033)	(0.013)	(0.036)	(0.016)	(0.036)	(0.038)	(0.027)	(0.017)	(0.043)	(0.025)
Household wealth												

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Table 8 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Poorer	0.016	0.004	0.048	0.014	0.194***	0.043***	0.032	0.050***	-0.003	0.007	0.090*	0.016
	(0.019)	(0.009)	(0.035)	(0.010)	(0.042)	(0.013)	(0.034)	(0.018)	(0.026)	(0.011)	(0.047)	(0.016)
Middle	0.011	-0.011	0.083**	0.056***	0.212***	0.093***	0.005	0.062***	-0.026	0.008	0.119***	0.061***
	(0.018)	(0.010)	(0.034)	(0.011)	(0.040)	(0.015)	(0.034)	(0.019)	(0.023)	(0.013)	(0.045)	(0.021)
Richer	0.012	-0.015	0.147***	0.107***	0.305***	0.167***	0.005	0.083***	-0.038	0.014	0.169***	0.087***
	(0.017)	(0.011)	(0.034)	(0.013)	(0.037)	(0.015)	(0.031)	(0.024)	(0.027)	(0.015)	(0.042)	(0.019)
Richest	0.018	-0.051***	0.331***	0.154***	0.487***	0.264***	0.025	0.118***	-0.016	0.043***	0.225***	0.134***
	(0.017)	(0.013)	(0.037)	(0.014)	(0.037)	(0.017)	(0.032)	(0.034)	(0.030)	(0.016)	(0.040)	(0.023)
Division												
Barishal	0.013	0.009	-0.041	0.012	0.080*	0.003	-0.048	0.014	0.073**	0.036*	0.105**	0.023
	(0.014)	(0.014)	(0.032)	(0.016)	(0.044)	(0.016)	(0.041)	(0.025)	(0.037)	(0.021)	(0.045)	(0.022)
Chattogram	-0.028*	-0.090***	-0.044	-0.050***	-0.041*	0.005	-0.011	-0.028	0.052**	0.057***	0.044	0.022
	(0.014)	(0.012)	(0.028)	(0.018)	(0.024)	(0.016)	(0.023)	(0.021)	(0.023)	(0.020)	(0.030)	(0.019)
Khulna	0.009	0.057***	0.102***	0.032**	0.131***	0.107***	0.055*	0.060**	0.018	0.016	0.063**	0.053**
	(0.013)	(0.012)	(0.026)	(0.014)	(0.029)	(0.015)	(0.031)	(0.025)	(0.030)	(0.020)	(0.032)	(0.022)
Rajshahi	0.066***	0.103***	-0.004	0.047***	0.028	0.025*	0.082***	0.036	0.046*	0.054***	0.004	-0.010
	(0.013)	(0.012)	(0.027)	(0.016)	(0.029)	(0.015)	(0.030)	(0.022)	(0.026)	(0.019)	(0.031)	(0.021)
Rangpur	0.047***	0.089***	0.158***	0.097***	0.113**	0.051***	-0.013	0.103***	0.019	0.015	0.114***	0.033
	(0.018)	(0.014)	(0.042)	(0.020)	(0.047)	(0.017)	(0.034)	(0.031)	(0.026)	(0.023)	(0.039)	(0.024)
Sylhet	-0.058***	-0.075***	0.002	0.031**	0.031	0.021	-0.037	-0.061***	0.017	0.045**	0.028	0.060**
	(0.017)	(0.016)	(0.030)	(0.015)	(0.034)	(0.018)	(0.023)	(0.021)	(0.027)	(0.022)	(0.040)	(0.023)
BDHS wave												
2007 wave	0.006	-0.003	0.020	0.046**	0.040	0.044***	0.046	0.070***	0.087***	0.106***	0.031	0.066***
	(0.017)	(0.014)	(0.034)	(0.018)	(0.032)	(0.017)	(0.032)	(0.023)	(0.031)	(0.019)	(0.038)	(0.022)
2011 wave	0.032**	0.053***	0.045	0.049***	0.171***	0.118***	0.024	0.115***	-0.254***	-0.189***	0.028	0.098***
	(0.016)	(0.012)	(0.029)	(0.015)	(0.030)	(0.015)	(0.028)	(0.022)	(0.029)	(0.017)	(0.038)	(0.019)
2014 wave	0.056***	0.074***	0.068**	0.119***	0.254***	0.179***	0.015	0.073***	-0.196***	-0.186***	0.074*	0.131***
	(0.017)	(0.014)	(0.033)	(0.020)	(0.030)	(0.018)	(0.027)	(0.022)	(0.027)	(0.019)	(0.038)	(0.023)
2017 wave	0.041**	0.057***	0.216***	0.216***	0.347***	0.281***	0.018	0.117***	-0.080***	-0.019	-0.064	0.084***
	(0.017)	(0.013)	(0.030)	(0.015)	(0.029)	(0.015)	(0.027)	(0.025)	(0.028)	(0.017)	(0.039)	(0.021)
Sex of child												
Female							-0.017	0.008	0.000	0.002	-0.024	-0.043***

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Table 8 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	Urban (1)	Rural (2)	Urban (3)	Rural (4)	Urban (5)	Rural (6)	Urban (7)	Rural (8)	Urban (9)	Rural (10)	Urban (11)	Rural (12)
							(0.017)	(0.012)	(0.011)	(0.008)	(0.019)	(0.011)
Child's age (month)												
<12							0.000	0.000	-0.171***	-0.184***	0.093***	0.049***
							(.)	(.)	(0.025)	(0.015)	(0.026)	(0.015)
12-23							0.000	0.000	-0.018	-0.027***	0.085***	0.028**
							(.)	(.)	(0.014)	(0.010)	(0.024)	(0.013)
Pseudo-R^2	0.04	0.05	0.18	0.16	0.24	0.18	0.07	0.08	0.08	0.07	0.06	0.04
N	25,666	45,681	8,910	17,613	8,575	16,819	2,393	4,653	8,494	16,364	3,693	7,774

Note: See the footnotes of Table 3.

Appendix A: Additional tables

Table A.1: **Risk factors related to woman and child health**

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Proximity to health facility												
Ln(distance to facility)	-0.00	-0.00	-0.02	-0.04	-0.01	-0.02	-0.04	-0.04*	-0.04**	-0.05**	0.00	0.00
	(0.01)	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Woman's/mother's age group												
15-19 years	-0.17***	-0.18***	0.00	0.00	0.02*	0.02*	-0.04**	-0.04**	-0.06***	-0.06***	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
20-24 years	-0.07***	-0.07***	0.00	0.00	-0.00	-0.00	-0.01	-0.01	-0.02**	-0.02**	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
30-34 years	0.03***	0.03***	-0.00	-0.00	-0.01	-0.01	0.00	0.00	0.01	0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
35-39 years	-0.00	-0.00	-0.01	-0.02	0.00	0.01	0.02	0.02	0.00	0.00	-0.05**	-0.05**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
40-44 years	-0.14***	-0.14***	-0.02	-0.05*	-0.02	-0.04	-0.04	-0.04	-0.02	-0.02	-0.06**	-0.08*
	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)	(0.03)	(0.05)	(0.04)	(0.02)	(0.02)	(0.03)	(0.04)
45-49 years	-0.30***	-0.32***	-0.06**	-0.17**	-0.02	-0.04	-0.34**	-0.22**	-0.08*	-0.07**	-0.05	-0.06
	(0.01)	(0.01)	(0.03)	(0.09)	(0.04)	(0.08)	(0.14)	(0.09)	(0.04)	(0.04)	(0.06)	(0.08)
Woman's/mother's schooling												
Primary	0.01**	0.01**	0.04***	0.09***	0.02**	0.06***	0.07***	0.05***	0.02**	0.03**	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Secondary	0.02***	0.02***	0.12***	0.17***	0.12***	0.16***	0.13***	0.11***	0.06***	0.06***	0.03**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Higher	0.00	0.00	0.25***	0.26***	0.27***	0.31***	0.16***	0.16***	0.07***	0.08***	0.12***	0.11***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Partner's/father's schooling												
Primary	-0.00	-0.00	0.01*	0.03***	0.01	0.02	0.05***	0.04***	0.02*	0.02*	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Secondary	-0.03***	-0.03***	0.06***	0.07***	0.06***	0.07***	0.04**	0.03*	0.02**	0.02**	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Higher	-0.02**	-0.02**	0.15***	0.14***	0.17***	0.18***	0.07***	0.09***	0.05***	0.05***	0.02	0.02

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Table A.1 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.02)	(0.02)
Household wealth												
Poorer	0.00	0.00	0.01	0.02	0.03***	0.06***	0.06***	0.04***	0.01	0.01	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Middle	-0.01	-0.01	0.04***	0.06***	0.07***	0.11***	0.06***	0.05***	0.01	0.01	0.05***	0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Richer	-0.01	-0.01	0.08***	0.11***	0.15***	0.19***	0.07***	0.06***	0.01	0.01	0.08***	0.09***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Richest	-0.02***	-0.03***	0.21***	0.21***	0.29***	0.33***	0.09***	0.09***	0.03**	0.03**	0.15***	0.15***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Urban/rural												
Rural	-0.06***	-0.06***	-0.09***	-0.09***	-0.08***	-0.09***	0.01	0.01	0.00	0.00	-0.08***	-0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Division												
Barishal	0.01	0.01	-0.01	-0.00	0.00	0.01	0.00	0.00	0.04**	0.04**	0.03*	0.04*
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Chattogram	-0.07***	-0.07***	-0.05***	-0.05***	-0.01	-0.01	-0.02	-0.02	0.06***	0.06***	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Khulna	0.04***	0.05***	0.04***	0.04***	0.10***	0.12***	0.05***	0.06***	0.02	0.02	0.05***	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Rajshahi	0.09***	0.10***	0.03**	0.04***	0.02*	0.03*	0.04**	0.04**	0.05***	0.05***	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Rangpur	0.08***	0.08***	0.11***	0.11***	0.05***	0.06***	0.07***	0.08***	0.02	0.02	0.04*	0.04**
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Sylhet	-0.07***	-0.07***	0.02	0.03*	0.01	0.02	-0.07***	-0.06***	0.05***	0.05***	0.05***	0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
BDHS wave												
2007 wave	0.00	0.00	0.03**	0.04**	0.03**	0.05***	0.08***	0.06***	0.07***	0.10***	0.05***	0.06***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
2011 wave	0.04***	0.05***	0.03***	0.05***	0.10***	0.14***	0.11***	0.09***	-0.21***	-0.20***	0.07***	0.08***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
2014 wave	0.07***	0.07***	0.09***	0.11***	0.16***	0.21***	0.07***	0.06***	-0.19***	-0.19***	0.11***	0.12***

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Table A.1 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
2017 wave	0.05***	0.05***	0.22***	0.22***	0.26***	0.32***	0.10***	0.09***	-0.03***	-0.04**	0.04**	0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Sex of child												
Female							0.00	0.00	0.00	0.00	-0.04***	-0.04***
							(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Child's age (month)												
<12							0.00	0.00	-0.20***	-0.18***	0.06***	0.06***
							(.)	(.)	(0.01)	(0.01)	(0.01)	(0.01)
12-23							0.00	0.00	-0.02***	-0.03***	0.04***	0.04***
							(.)	(.)	(0.01)	(0.01)	(0.01)	(0.01)
Constant	0.59***		0.08***		0.04***		0.55***		0.77***		0.16***	
	(0.01)		(0.01)		(0.01)		(0.03)		(0.02)		(0.02)	
R^2	0.06		0.22		0.27		0.08		0.09		0.07	
Pseudo-R^2		0.04		0.20		0.23		0.08		0.07		0.06
N	73,040	73,040	27,090	27,090	25,929	25,929	7,223	7,223	25,441	25,441	11,751	11,751

Note: See the footnotes of Table 3.

TABLE A.2: **Risk factors related to woman and child health**

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
Proximity to health facility												
No centre in own village	-0.004	-0.004	-0.014	-0.018	-0.001	-0.001	-0.020	-0.018	-0.035**	-0.035***	0.007	0.007
	(0.009)	(0.010)	(0.012)	(0.015)	(0.011)	(0.014)	(0.018)	(0.016)	(0.013)	(0.013)	(0.016)	(0.017)
Woman's/mother's age group												
15-19 years	-0.173***	-0.178***	0.002	0.003	0.017*	0.022*	-0.039**	-0.038**	-0.063***	-0.061***	0.000	0.000
	(0.008)	(0.009)	(0.010)	(0.011)	(0.009)	(0.011)	(0.016)	(0.015)	(0.012)	(0.012)	(0.015)	(0.015)
20-24 years	-0.069***	-0.071***	0.002	0.003	-0.003	-0.002	-0.015	-0.015	-0.022**	-0.022**	0.000	0.001
	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.009)	(0.013)	(0.014)	(0.009)	(0.010)	(0.012)	(0.012)
30-34 years	0.026***	0.028***	-0.001	-0.001	-0.008	-0.010	0.004	0.003	0.007	0.009	-0.007	-0.006
	(0.007)	(0.008)	(0.010)	(0.012)	(0.009)	(0.012)	(0.019)	(0.019)	(0.010)	(0.011)	(0.014)	(0.014)
35-39 years	-0.000	-0.000	-0.012	-0.015	0.003	0.011	0.021	0.016	0.004	0.005	-0.049**	-0.054**
	(0.008)	(0.008)	(0.014)	(0.019)	(0.011)	(0.016)	(0.024)	(0.023)	(0.012)	(0.013)	(0.019)	(0.023)
40-44 years	-0.137***	-0.141***	-0.022	-0.047*	-0.021	-0.042	-0.042	-0.037	-0.018	-0.016	-0.059**	-0.080*
	(0.008)	(0.009)	(0.014)	(0.026)	(0.016)	(0.030)	(0.047)	(0.037)	(0.022)	(0.022)	(0.028)	(0.041)
45-49 years	-0.295***	-0.316***	-0.059**	-0.172**	-0.015	-0.038	-0.345**	-0.220**	-0.080*	-0.075**	-0.047	-0.064
	(0.009)	(0.011)	(0.027)	(0.087)	(0.036)	(0.076)	(0.138)	(0.091)	(0.041)	(0.036)	(0.058)	(0.081)
Woman's/mother's schooling												
Primary	0.013**	0.014**	0.037***	0.091***	0.018**	0.063***	0.069***	0.046***	0.025**	0.026**	0.008	0.015
	(0.006)	(0.007)	(0.007)	(0.012)	(0.008)	(0.013)	(0.021)	(0.015)	(0.013)	(0.012)	(0.014)	(0.017)
Secondary	0.022***	0.023***	0.121***	0.173***	0.117***	0.165***	0.134***	0.111***	0.061***	0.062***	0.033**	0.040**
	(0.007)	(0.008)	(0.009)	(0.012)	(0.010)	(0.014)	(0.020)	(0.017)	(0.013)	(0.013)	(0.017)	(0.019)
Higher	0.003	0.003	0.249***	0.262***	0.266***	0.313***	0.155***	0.160***	0.073***	0.078***	0.125***	0.114***
	(0.011)	(0.012)	(0.015)	(0.015)	(0.015)	(0.019)	(0.025)	(0.031)	(0.017)	(0.019)	(0.026)	(0.024)
Partner's/father's schooling												
Primary	-0.002	-0.002	0.012*	0.027***	0.006	0.018	0.052***	0.041***	0.022*	0.021*	0.010	0.013
	(0.006)	(0.006)	(0.007)	(0.010)	(0.008)	(0.012)	(0.018)	(0.015)	(0.012)	(0.012)	(0.013)	(0.015)
Secondary	-0.028***	-0.030***	0.057***	0.069***	0.060***	0.071***	0.037**	0.027*	0.024**	0.024**	0.042***	0.043***
	(0.007)	(0.007)	(0.010)	(0.012)	(0.009)	(0.012)	(0.018)	(0.016)	(0.011)	(0.010)	(0.015)	(0.016)
Higher	-0.023**	-0.024**	0.148***	0.136***	0.166***	0.175***	0.072***	0.087***	0.049***	0.053***	0.017	0.020
	(0.010)	(0.011)	(0.014)	(0.013)	(0.014)	(0.015)	(0.023)	(0.028)	(0.014)	(0.015)	(0.022)	(0.021)
Household wealth												
Poorer	0.004	0.004	0.006	0.017	0.031***	0.060***	0.055***	0.044***	0.008	0.007	0.013	0.018

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Table A.2 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM (1)	Logit (2)	LPM (3)	Logit (4)	LPM (5)	Logit (6)	LPM (7)	Logit (8)	LPM (9)	Logit (10)	LPM (11)	Logit (12)
	(0.008)	(0.008)	(0.007)	(0.012)	(0.008)	(0.014)	(0.019)	(0.016)	(0.010)	(0.010)	(0.012)	(0.016)
Middle	-0.007	-0.007	0.036***	0.060***	0.070***	0.112***	0.061***	0.050***	0.009	0.008	0.054***	0.064***
	(0.008)	(0.009)	(0.009)	(0.012)	(0.011)	(0.015)	(0.020)	(0.016)	(0.012)	(0.012)	(0.018)	(0.020)
Richer	-0.010	-0.011	0.084***	0.108***	0.148***	0.194***	0.072***	0.061***	0.008	0.008	0.081***	0.089***
	(0.008)	(0.009)	(0.011)	(0.013)	(0.012)	(0.015)	(0.021)	(0.019)	(0.012)	(0.012)	(0.016)	(0.017)
Richest	-0.025***	-0.027***	0.210***	0.206***	0.291***	0.330***	0.094***	0.088***	0.028**	0.030**	0.152***	0.147***
	(0.010)	(0.010)	(0.013)	(0.014)	(0.013)	(0.016)	(0.022)	(0.023)	(0.013)	(0.014)	(0.019)	(0.019)
Urban/rural												
Rural	-0.059***	-0.063***	-0.091***	-0.091***	-0.078***	-0.090***	0.009	0.008	0.003	0.004	-0.083***	-0.078***
	(0.006)	(0.007)	(0.010)	(0.009)	(0.009)	(0.010)	(0.012)	(0.013)	(0.012)	(0.012)	(0.014)	(0.012)
Division												
Barishal	0.010	0.010	-0.005	-0.002	0.004	0.009	0.003	0.003	0.038**	0.038**	0.032*	0.035*
	(0.011)	(0.011)	(0.013)	(0.015)	(0.012)	(0.016)	(0.021)	(0.020)	(0.017)	(0.017)	(0.019)	(0.020)
Chattogram	-0.070***	-0.074***	-0.049***	-0.054***	-0.008	-0.008	-0.022	-0.021	0.057***	0.059***	0.022	0.024
	(0.009)	(0.010)	(0.013)	(0.016)	(0.011)	(0.014)	(0.017)	(0.016)	(0.015)	(0.015)	(0.016)	(0.016)
Khulna	0.043***	0.045***	0.037***	0.042***	0.100***	0.120***	0.048***	0.055***	0.022	0.021	0.052***	0.054***
	(0.009)	(0.009)	(0.012)	(0.012)	(0.013)	(0.014)	(0.017)	(0.019)	(0.016)	(0.017)	(0.019)	(0.019)
Rajshahi	0.090***	0.096***	0.031**	0.039***	0.019*	0.026*	0.041**	0.039**	0.052***	0.053***	-0.010	-0.013
	(0.009)	(0.010)	(0.012)	(0.015)	(0.011)	(0.015)	(0.019)	(0.019)	(0.015)	(0.015)	(0.016)	(0.018)
Rangpur	0.080***	0.084***	0.111***	0.112***	0.048***	0.061***	0.067***	0.080***	0.022	0.024	0.040*	0.043**
	(0.011)	(0.012)	(0.020)	(0.019)	(0.016)	(0.018)	(0.019)	(0.025)	(0.021)	(0.019)	(0.022)	(0.022)
Sylhet	-0.071***	-0.075***	0.018	0.029*	0.010	0.023	-0.067***	-0.055***	0.047***	0.049***	0.054***	0.058***
	(0.013)	(0.013)	(0.013)	(0.015)	(0.014)	(0.018)	(0.022)	(0.017)	(0.018)	(0.018)	(0.020)	(0.020)
BDHS wave												
2007 wave	0.000	0.000	0.027**	0.041**	0.024**	0.044***	0.077***	0.061***	0.065***	0.102***	0.048***	0.057***
	(0.011)	(0.011)	(0.012)	(0.017)	(0.010)	(0.016)	(0.023)	(0.019)	(0.011)	(0.016)	(0.016)	(0.019)
2011 wave	0.045***	0.047***	0.033***	0.050***	0.097***	0.140***	0.108***	0.093***	-0.213***	-0.203***	0.072***	0.081***
	(0.009)	(0.010)	(0.010)	(0.014)	(0.010)	(0.014)	(0.021)	(0.018)	(0.015)	(0.014)	(0.015)	(0.018)
2014 wave	0.066***	0.070***	0.089***	0.108***	0.159***	0.209***	0.075***	0.058***	-0.190***	-0.186***	0.109***	0.115***
	(0.010)	(0.011)	(0.015)	(0.018)	(0.013)	(0.016)	(0.022)	(0.018)	(0.015)	(0.015)	(0.019)	(0.020)
2017 wave	0.051***	0.053***	0.218***	0.222***	0.265***	0.316***	0.104***	0.089***	-0.031***	-0.034**	0.039**	0.049***
	(0.010)	(0.010)	(0.013)	(0.014)	(0.012)	(0.015)	(0.021)	(0.019)	(0.012)	(0.014)	(0.016)	(0.018)

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Table A.2 (Continued)

	Woman health						Child health					
	Contraceptive use		ANC intake		PNC intake		Vaccine intake		Vitamin A intake		Advice for fever	
	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit	LPM	Logit
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sex of child												
Female							0.003	0.002	0.002	0.002	-0.039***	-0.040***
							(0.010)	(0.010)	(0.006)	(0.006)	(0.009)	(0.009)
Child's age (month)												
<12							0.000	0.000	-0.202***	-0.179***	0.056***	0.058***
							(.)	(.)	(0.015)	(0.013)	(0.013)	(0.013)
12-23							0.000	0.000	-0.024***	-0.026***	0.039***	0.040***
							(.)	(.)	(0.008)	(0.008)	(0.011)	(0.012)
Constant	0.589***		0.083***		0.044***		0.546***		0.770***		0.158***	
	(0.013)		(0.014)		(0.012)		(0.033)		(0.017)		(0.023)	
R^2	0.06		0.22		0.27		0.08		0.09		0.07	
Pseudo-R^2		0.04		0.20		0.23		0.07		0.07		0.06
N	73,040	73,040	27,090	27,090	25,929	25,929	7,223	7,223	25,441	25,441	11,751	11,751

Note: See the footnotes of Table 3.

TABLE A.3: **Risk factors related to women and child health**
(Repeats Table 3 on observations with nearest health centre not Community Clinic)

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
Proximity to health facility						
Distance $\geq$ 2km	0.050	0.088	0.157	0.066	0.036	0.055
	(0.062)	(0.109)	(0.157)	(0.098)	(0.066)	(0.062)
Woman's/mother's age group						
15-19 years	-0.215***	-0.023	-0.062	-0.110*	-0.066	0.043
	(0.044)	(0.050)	(0.060)	(0.064)	(0.076)	(0.089)
20-24 years	-0.098**	0.004	-0.044	0.048	0.005	0.145**
	(0.046)	(0.044)	(0.056)	(0.066)	(0.050)	(0.061)
30-34 years	0.065	-0.029	-0.037	0.088	-0.007	-0.019
	(0.048)	(0.058)	(0.070)	(0.109)	(0.072)	(0.094)
35-39 years	0.005	-0.082	0.085	0.099	-0.047	0.042
	(0.045)	(0.096)	(0.153)	(0.118)	(0.076)	(0.177)
40-44 years	-0.179***	-0.221	0.054		-0.044	0.419
	(0.050)	(0.175)	(0.235)		(0.213)	(0.251)
45-49 years	-0.389***		0.415*			
	(0.061)		(0.229)			
Woman's/mother's schooling						
Primary	-0.001	0.061	0.178	0.129	0.081	-0.009
	(0.043)	(0.096)	(0.108)	(0.089)	(0.069)	(0.133)
Secondary	0.006	0.207**	0.181*	0.058	0.070	0.044
	(0.043)	(0.095)	(0.094)	(0.142)	(0.081)	(0.138)
Higher	0.079	0.377***	0.216*	0.202	0.150	0.302
	(0.084)	(0.111)	(0.129)	(0.221)	(0.139)	(0.205)
Partner's/father's schooling						
Primary	-0.012	-0.138**	0.116	0.051	0.004	0.177**
	(0.033)	(0.056)	(0.071)	(0.073)	(0.051)	(0.084)
Secondary	-0.080*	-0.096*	0.168**	0.137	0.021	0.088
	(0.045)	(0.052)	(0.070)	(0.120)	(0.059)	(0.093)
Higher	0.068	-0.010	0.255***	0.136	-0.024	-0.057
	(0.081)	(0.063)	(0.085)	(0.172)	(0.087)	(0.130)
Household wealth						
Poorer	-0.106**	0.050	0.050	-0.058	-0.019	-0.072
	(0.041)	(0.078)	(0.080)	(0.084)	(0.058)	(0.105)
Middle	-0.028	0.076	0.121	-0.025	0.065	0.154*
	(0.051)	(0.077)	(0.095)	(0.117)	(0.055)	(0.091)
Richer	-0.061	0.159**	0.252**	0.121	0.124	0.226**
	(0.054)	(0.075)	(0.104)	(0.139)	(0.086)	(0.109)
Richest	-0.098	0.209**	0.495***	0.249	0.184	0.196
	(0.072)	(0.097)	(0.124)	(0.156)	(0.147)	(0.132)

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Table A.3 (Continued)

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
Urban/rural						
Rural	0.001	0.007	0.088		0.171	-0.016
	(0.057)	(0.071)	(0.153)		(0.118)	(0.097)
Division						
Barishal	0.063	-0.013	-0.103	-0.141	-0.041	-0.099
	(0.049)	(0.103)	(0.127)	(0.114)	(0.087)	(0.126)
Chattogram	-0.066	0.020	-0.002	-0.097	-0.028	-0.137
	(0.056)	(0.090)	(0.146)	(0.110)	(0.090)	(0.123)
Khulna	0.156***	0.129**	0.210**	-0.222*	0.125	-0.181
	(0.046)	(0.063)	(0.097)	(0.111)	(0.123)	(0.131)
Rajshahi	0.125**	0.055	0.063	-0.021	0.043	-0.294**
	(0.048)	(0.072)	(0.114)	(0.119)	(0.105)	(0.135)
Rangpur	0.188***	0.032	0.045	-0.002	0.157	-0.202
	(0.046)	(0.073)	(0.103)	(0.131)	(0.103)	(0.126)
Sylhet	-0.137**	-0.102	-0.037	-0.280**	0.312**	-0.114
	(0.055)	(0.065)	(0.110)	(0.137)	(0.148)	(0.138)
BDHS wave						
2007 wave	-0.052	0.071	0.019	-0.187	0.002	0.144
	(0.078)	(0.112)	(0.199)	(0.185)	(0.086)	(0.144)
2011 wave	-0.072	0.088	0.244	-0.119	-0.389***	0.055
	(0.064)	(0.098)	(0.203)	(0.184)	(0.141)	(0.118)
2014 wave	-0.029	0.034	0.256	-0.064	-0.219***	0.141
	(0.059)	(0.093)	(0.188)	(0.170)	(0.056)	(0.104)
2017 wave	-0.106**	0.043	0.355**	-0.071	-0.144*	0.156*
	(0.051)	(0.099)	(0.177)	(0.176)	(0.073)	(0.085)
Sex of child						
Female				0.017	0.024	-0.095*
				(0.078)	(0.047)	(0.049)
Child's age (month)						
<12					-0.106	0.019
					(0.081)	(0.073)
12-23					-0.092**	-0.041
					(0.045)	(0.070)
Pseudo-R^2	0.08	0.17	0.20	0.18	0.08	0.12
N	1,693	565	535	172	580	283

Note: See the footnotes of Table 3.

TABLE A.4: **Risk factors related to women and child health**
(Repeats Table 3 with control for nearest centres not Community Clinics)

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
Proximity to health facility						
Distance $\geq$ 2km	0.016	-0.040	-0.035*	-0.038	-0.051**	0.013
	(0.016)	(0.027)	(0.020)	(0.025)	(0.023)	(0.022)
Nearest centre is not CC	0.001	-0.034	0.015	-0.026	-0.013	0.022
	(0.015)	(0.030)	(0.035)	(0.031)	(0.028)	(0.030)
Woman's/mother's age group						
15-19 years	-0.178***	0.003	0.022*	-0.037**	-0.061***	0.000
	(0.009)	(0.011)	(0.011)	(0.015)	(0.012)	(0.016)
20-24 years	-0.071***	0.003	-0.002	-0.015	-0.022**	0.001
	(0.008)	(0.008)	(0.009)	(0.014)	(0.010)	(0.012)
30-34 years	0.028***	-0.001	-0.010	0.004	0.008	-0.006
	(0.008)	(0.012)	(0.012)	(0.019)	(0.011)	(0.014)
35-39 years	-0.000	-0.015	0.010	0.017	0.004	-0.054**
	(0.008)	(0.019)	(0.016)	(0.023)	(0.013)	(0.023)
40-44 years	-0.141***	-0.046*	-0.042	-0.036	-0.017	-0.080*
	(0.009)	(0.026)	(0.030)	(0.037)	(0.022)	(0.041)
45-49 years	-0.316***	-0.171**	-0.038	-0.216**	-0.074**	-0.064
	(0.011)	(0.087)	(0.076)	(0.091)	(0.036)	(0.081)
Woman's/mother's schooling						
Primary	0.014**	0.091***	0.063***	0.046***	0.026**	0.015
	(0.007)	(0.012)	(0.013)	(0.015)	(0.012)	(0.017)
Secondary	0.023***	0.173***	0.164***	0.111***	0.061***	0.040**
	(0.008)	(0.012)	(0.014)	(0.017)	(0.013)	(0.019)
Higher	0.004	0.261***	0.313***	0.161***	0.078***	0.114***
	(0.012)	(0.016)	(0.019)	(0.031)	(0.019)	(0.024)
Partner's/father's schooling						
Primary	-0.002	0.027***	0.018	0.041***	0.022*	0.013
	(0.006)	(0.010)	(0.012)	(0.015)	(0.011)	(0.015)
Secondary	-0.030***	0.069***	0.071***	0.027*	0.025**	0.043***
	(0.007)	(0.012)	(0.012)	(0.016)	(0.010)	(0.016)
Higher	-0.024**	0.137***	0.175***	0.086***	0.053***	0.020
	(0.011)	(0.013)	(0.015)	(0.028)	(0.015)	(0.022)
Household wealth						
Poorer	0.004	0.017	0.060***	0.043***	0.007	0.018
	(0.008)	(0.012)	(0.014)	(0.016)	(0.010)	(0.016)
Middle	-0.007	0.060***	0.112***	0.050***	0.007	0.064***
	(0.009)	(0.012)	(0.015)	(0.016)	(0.012)	(0.020)
Richer	-0.011	0.108***	0.194***	0.061***	0.008	0.089***
	(0.009)	(0.013)	(0.015)	(0.019)	(0.012)	(0.017)

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Table A.4 (Continued)

	Woman health			Child health		
	Contraceptive Use (1)	ANC intake (2)	PNC intake (3)	Vaccine intake (4)	Vitamin A intake (5)	Advice for fever (6)
Richest	-0.026***	0.206***	0.330***	0.088***	0.030**	0.147***
	(0.010)	(0.014)	(0.016)	(0.023)	(0.014)	(0.019)
Urban/rural						
Rural	-0.064***	-0.090***	-0.089***	0.009	0.004	-0.079***
	(0.007)	(0.009)	(0.010)	(0.013)	(0.012)	(0.012)
Division						
Barishal	0.010	-0.002	0.008	0.004	0.038**	0.035*
	(0.011)	(0.015)	(0.016)	(0.020)	(0.017)	(0.020)
Chattogram	-0.073***	-0.054***	-0.008	-0.021	0.060***	0.024
	(0.010)	(0.016)	(0.014)	(0.016)	(0.015)	(0.016)
Khulna	0.046***	0.042***	0.120***	0.055***	0.022	0.053***
	(0.009)	(0.012)	(0.014)	(0.019)	(0.017)	(0.019)
Rajshahi	0.095***	0.039***	0.027*	0.040**	0.054***	-0.013
	(0.010)	(0.015)	(0.015)	(0.019)	(0.015)	(0.018)
Rangpur	0.084***	0.112***	0.061***	0.080***	0.023	0.043**
	(0.012)	(0.019)	(0.018)	(0.025)	(0.019)	(0.022)
Sylhet	-0.075***	0.028*	0.023	-0.055***	0.048***	0.058***
	(0.013)	(0.015)	(0.018)	(0.017)	(0.018)	(0.020)
BDHS wave						
2007 wave	-0.001	0.041**	0.045***	0.062***	0.102***	0.057***
	(0.011)	(0.017)	(0.016)	(0.019)	(0.016)	(0.019)
2011 wave	0.047***	0.049***	0.139***	0.093***	-0.205***	0.081***
	(0.010)	(0.014)	(0.014)	(0.018)	(0.014)	(0.018)
2014 wave	0.070***	0.109***	0.209***	0.059***	-0.186***	0.115***
	(0.011)	(0.018)	(0.016)	(0.018)	(0.015)	(0.020)
2017 wave	0.053***	0.221***	0.316***	0.089***	-0.035**	0.049***
	(0.010)	(0.014)	(0.015)	(0.019)	(0.014)	(0.018)
Sex of child						
Female				0.002	0.002	-0.040***
				(0.010)	(0.006)	(0.009)
Child's age (month)						
<12					-0.179***	0.058***
					(0.013)	(0.013)
12-23					-0.026***	0.040***
					(0.008)	(0.012)
Pseudo-R^2	0.04	0.20	0.23	0.08	0.07	0.06
N	73,040	27,090	25,929	7,223	25,441	11,751

Note: See the footnotes of Table 3.