

論文の内容の要旨

論文題目 Effect of Continuum of Care card and NCD education on improving maternal health in Myanmar: a cluster randomized controlled trial
(ミャンマーにおける母親の健康改善に対する継続ケアカードと NCD 教育の効果：クラスター無作為化対照試験)

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Abstract

Background

Continuum of care (CoC) has become a key strategy of intervention program for improving health and wellbeing of mothers and newborns. Receiving care from antenatal to postnatal periods reduce the risk of combined neonatal, perinatal, and maternal mortality. The CoC also offers the critical entry point for prevention of non-communicable diseases (NCDs). Integration of NCD prevention and control programs would empower women to control NCDs for them and in their families.

Myanmar has the second-highest maternal mortality rate among Southeast Asian countries. In Myanmar, antenatal care (ANC) more than 4 times with skilled provider was 58.6%, skilled birth attendant (SBA) rate was 60.2% and postnatal care (PNC) in the first 2 days after birth was 71.2% in 2015. Estimation on probability of dying from cardiovascular diseases, cancers, chronic respiratory diseases and diabetes was 24.3 % in 2012 in Myanmar. Women were at higher risk of NCDs than men in Myanmar due to behavioral and biological risk factors.

This study had two objectives: the first one was to examine the effect of the CoC card and health education on NCDs and nutrition on mothers' utilization of continuum of care services and their knowledge on NCDs and nutrition in Myanmar, the second one was to identify the potential factors associated with the CoC completion in Myanmar.

Methods

I used a cluster randomized controlled trial (cRCT) design. The unit of randomization in this study was “ primary health center”, particularly Maternal and Child Health (MCH) Centers in urban areas and Rural Health Centers (RHC) in rural areas. I conducted this study in all primary health centers of three townships in the Ayeyarwaddy region: 10 in Pantanaw, 10 in Wakema and 12 in Ingapu. Of total 32 clusters, 16 clusters each were randomly allocated into the intervention and control groups. I conducted baseline survey in May and June 2017 and recruited 630 pregnant women who received ANC at health centers between 12 and 20 weeks of pregnancy and were aged 18 years and above. I conducted follow-up survey from January to May 2018. This trial was

registered at clinicaltrials.gov NCT03145155.

Intervention

1) Continuum of Care (CoC) card

I made one-page CoC card for pregnant women. The CoC card recorded four main topics: i) CoC services (at least four ANC visits, delivery with skilled attendant, and four PNC visits within 6 weeks postpartum), ii) essential services for pregnancy iii) health education services, iv) danger signs. To implement the CoC card intervention, I trained midwives (MWs) in the intervention group to provide CoC card to pregnant women. MWs placed star stickers on the CoC card if they received CoC services, essential services and health education.

2) Health education on NCDs and nutrition

Health education included five main categories: i) NCDs in general, hypertension, diabetes, anemia and nutrition. Health education mainly focused on risk factors, symptoms, preventions and complications of NCDs and guide for healthy nutrition. To implement this, I trained Public Health Supervisors 2 (PHS2) to provide health education to pregnant women four times: the first health education between 20 and 28 weeks of pregnancy, the second between 29 and 32 weeks of pregnancy, the third between 33 and 36 weeks of pregnancy and the fourth at six weeks after delivery.

Control group

Meanwhile, MWs in the control group continued with their standard care through MCH handbook. I trained PHS2 in the control group to provide health education on maternal and newborn care four times, same schedule as in the intervention group.

Outcomes

The primary outcomes were the CoC completion rate and mothers knowledge scores on NCDs and nutrition. CoC completion rate refers to receiving at least four ANCs, delivery assisted by skilled attendant, and four PNCs within six weeks postpartum at right schedule according to the national guidelines. The primary outcome was dichotomous. If a mother completed all these services, it was considered as CoC completion. If not, it was considered as incompleteness. Mothers' knowledge scores on NCDs and nutrition were composed of five categories: 1) NCDs in general, 2) hypertension, 3) diabetes, 4) anemia and 5) nutrition. A score of 1 was given for each correct answer and a score of 0 was given for each incorrect or "don't know" answer. Therefore, the knowledge score for 56 questions ranged from 0 to 56. A higher score meant a higher level of knowledge.

Data analysis

I used descriptive statistics for the socio-economic characteristics, and MNCH services and the complications during pregnancy, delivery and postnatal period. For the primary objective, I followed intention-to-treat principle for CoC completion and knowledge on NCDs and nutrition. I used chi-square test to compare the CoC completion rate between the two groups and generalized

estimating equations (GEE) to see the effect of health education intervention at follow-up. In addition I also carried out sensitivity analyses for two primary outcomes. For CoC completion, I performed three scenarios: for the best scenario in which all the lost to follow-up mothers completed CoC, for the worst scenario in which all the lost to follow-up mothers did not complete CoC and for the third scenario with new definition of CoC (ANC at least four times, SBA and PNC 3 times within 7 days postpartum). For knowledge on NCDs and nutrition, I performed three scenarios by using paired t-test: intention-to-treat basic including all mothers (n=630), only completers who participated in both baseline and follow-up surveys (n=542), and per-protocol basic including completers who received health education for four times (n=510). For the secondary objective, I performed mixed-effects logistic regression analyses to identify the factors associated with CoC completion. I used STATA 13 for data analysis and set the level of significance at p-value <0.05.

Results

A total of 332 pregnant women belonged to the intervention group and 298 to the control group. The number of pregnant women in each cluster varied widely from 4 to 53. The mean cluster size was 15.6. At follow-up, a total of 283 mothers were available from the intervention group and 259 from the control group. The reason for the lost to follow-up was migration to different townships, absence at the time of data collection due to working or travelling and mother's disagreement to participate.

Mothers in the intervention group were more likely to receive CoC services than in the control group; receiving ANC at least 4 times was 85.4% in the intervention group and 73.8% in the control group (p<0.001), receiving PNC 4 times within 24 hours, at 3 days, at 7 days and at 6 weeks was 24.1% in the intervention group and 7.4 % in the control group (p<0.001). Only 62 (22.6%) mothers in the intervention group completed CoC whereas 17 (7.0%) mothers in the control group completed CoC (p<0.001). In sensitivity analysis for CoC, the CoC completion rates in the intervention group were significantly higher than in the control group: in the best scenario 36.1% vs. 23.8% (p=0.001), in the worst scenario 18.7% vs. 5.7% (p<0.001) and in the new CoC definition scenario 34.3% vs 14.3% (p<0.001).

The health education intervention shows significant effect on mother's knowledge scores over time in the intervention group (beta=2.7, p=0.008). The knowledge scores were significantly higher in follow-up compared to baseline (beta=6.4, p<0.001) in both groups. Other associated factors included mother's age, wealth index and family member's smoking status. In sensitivity analysis for the knowledge on NCDs and nutrition, the scores increased from 39.1 to 48.1 in the intervention group (p<0.001) and from 40.5 to 46.5 in the control group (p<0.001) among who completed both baseline and follow-up surveys. Similarly, the change in the intervention group was slightly greater than in the control group in per-protocol analysis; the scores increased from 38.9 to 48.2 in the intervention group (p<0.001) and from 40.5 to 47.0 in the control group (p<0.001).

Mothers in the intervention group (AOR=8.0; 95% CI 2.3-28.0), mothers who undergone cesarean section (AOR= 4.0; 95% CI 1.7-9.4) and mothers who reported neonatal complications (AOR=3.3; 95% CI 1.4-7.8) were more likely to complete CoC services.

Discussion

This study showed the effect of the CoC card, which improved the CoC completion rate among mothers in the intervention group. It also showed the significant effect of health education on mothers' knowledge on NCDs and nutrition in the intervention group. Type of delivery and neonatal complications were associated with the CoC completion among mothers. Mother's age, wealth index and family member's smoking status were associated with their knowledge on NCDs and nutrition.

The CoC completion rate in the intervention group (22.6%) was three times higher than in the control group (7.0%) which suggests the CoC card could encourage mothers in the intervention group to receive the necessary services from pregnancy to postnatal period. The CoC completion rate in Asia and Sub-Saharan African countries ranged from 5.0% to 59.8%. As the definition of CoC completion in this study was different from those studies, the rates were widely different. Similar to other studies, among the components of CoC, the rate of receiving PNC four times within 6 weeks postpartum was the lowest. In this study, receiving PNC within 24 hours was high but the remaining visits were dramatically lower in both groups. Low utilization of PNC services in Myanmar may be due to lack of knowledge on PNC care among mothers, insufficient care from health care providers during postnatal period and high prevalence of traditional postpartum practices and misconceptions. The CoC completion was associated with mode of delivery and neonatal complications.

This study also showed the significant effect of health education on mothers' knowledge scores on NCDs and nutrition. Mother's age, wealth-index, and smoking status of family members were also associated with mothers' knowledge scores on NCDs and nutrition.

Conclusion

In conclusion, the Continuum of Care (CoC) card intervention was effective in encouraging mothers to receive the services from pregnancy to 6 weeks postpartum. In Myanmar, receiving PNC four times within 6 weeks is the most challenging component for CoC completion. Health education on NCDs and nutrition also had effect on increasing the mothers' knowledge scores on NCDs and nutrition. The Continuum of Care (CoC) card intervention should be scaled up at all levels of health care including hospitals in Myanmar. At the same time, it is important to educate mothers in Myanmar about the schedules and importance of PNC. Health education on NCDs should be integrated in routine MNCH education in Myanmar. Health education about NCDs should be emphasized for vulnerable populations such as teenage mothers, mothers in the lowest and highest wealth quintiles and mothers whose family members have smoking habit.