



Impact of Behaviour Change Communication among Pregnant Women Regarding Knowledge of Low Birth Weight Infants' Susceptibility to Certain Morbidities

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Authors' contributions

This work was carried out in collaboration between all authors. Author MHK designed the study, performed the data acquisition, data analysis, statistical analysis, wrote the protocol, wrote the first draft of the manuscript and manuscript review. Authors NK, AA and RK managed the analyses of the study, manuscript editing and review. All authors read and approved the final manuscript.

Research Article

Received 21st February 2013
Accepted 14th May 2013
Published 11th June 2013

ABSTRACT

Objective: To assess the impact of Behaviour Change Communication (BCC) Package among pregnant women regarding correct knowledge of susceptibility of the low birth weight neonate to certain morbidities.

Study Design: A community based intervention study.

Place and Duration of Study: Field practices areas of Urban Health Training Center Department of Community Medicine, JNMCH, AMU Aligarh (UP) India, between September 2008 to August 2009.

Participants: 200 pregnant women (100 pregnant women from each intervention and non-intervention groups) were enrolled.

Sampling: Purposive sampling method.

Statistical Analyses: Data analysed with Epi Info version 3.5.1. Significant difference was

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determined using Chi-square test. The impact of Behaviour Change Communication was assessed using relative risk and difference was accepted significant at more than 95% (p value <0.05). Intervention and non-intervention were also compared after 7th and 28th of delivery days.

Results: Before BCC package intervention, there was no significant difference (p-value>0.05) between two groups regarding correct knowledge about susceptibility of low birth weight infants to different conditions. Due to impact of BCC Intervention, knowledge regarding susceptibility of LBW baby to infection was increased to two times. Knowledge regarding susceptibility of LBW baby to yellow palm and sole was increased to four and half times. Knowledge regarding susceptibility of LBW baby to feeding difficulty was increased to seven times and knowledge regarding susceptibility of LBW baby to hypoglycemia was increased to 4.75 times. Knowledge of mother regarding susceptibility of LBW baby to infection, yellow palm and sole, feeding difficulty and hypoglycemia were increased significantly (p-value <0.05) in the intervention group due to impact of the BCC package on 7th day of follow up and was maintained on the 28th day after delivery.

Conclusion: There was significant improvement in pregnant women regarding correct knowledge about susceptibility of the low birth weight neonate to different conditions.

Keywords: BCC; infection; jaundice; feeding difficulty; hypoglycemia; susceptibility.

1. INTRODUCTION

Low birth weight (LBW) is one of the important causes for the high infant mortality rate (IMR) in developing countries. In India [1] LBW babies have been reported to lag behind their heavier counterparts in development for the rest of their lives [2]. The relationship between low birth weight (LBW) and the elevated risk of infant mortality, congenital malformation and other physical and neurological impairments is well established [3,4]. Thus, birth weight and especially LBW are recognized as essential indicators for monitoring and evaluating maternal and child health and nutritional programs.

Low birth weight infants run the risk of developing many complications. Respiratory distress, sleep apnea, heart problems, jaundice, anemia, chronic lung disorders are all problems of premature babies, not usually LBW term babies. Although several complications associated with pre-term birth may decrease or disappear with time, a few of them are permanent. Low birth weight babies also have low reserves of energy. They are prone to hypoglycemia (low blood sugar levels), hypothermia (low body temperature), and other metabolic problems that can leave a permanent effect.

It has been realized that good knowledge and favorable attitudes are not sufficient to have preventive action in the individual and community. There is a need of changing behavior, which is directly related to change in bad practices. So, the communication should be such which can focus on behavior change. It is only possible with research-based, client-centered, benefit-oriented, service-linked, and professionally developed behavior change communication (BCC) [5].

According to 6th Joint Review Report [6] on National Rural Health Mission (NRHM) in addressing child health, management of diarrhea and ARI guidelines have been revised and circulated to all states. Additionally, an Information Education Communication (IEC)/BCC package is being worked out in consultation with IEC Division to promote the use of oral rehydration salt solution (ORS) and zinc in states. It was also found that, though there was

some IEC material on Reproductive and Child Health (RCH) issues and Janani Suraksha Yojana (JSY) displayed, these were sporadic and had no thought out strategy behind them to influence clients or service providers. BCC was lacking both in terms of any coordinated effort and content of messages.

However, not much information was available on impact of BCC on neonatal health. Therefore, the present study was conducted to assess the impact of the Behaviour Change Communication (BCC) Package among pregnant women regarding correct knowledge of susceptibility of the low birth weight neonate to certain morbidities.

2. MATERIALS AND METHODS

The present community based intervention IRB-approved study was conducted in the field practice area of the Urban Health Training Centre (UHTC), Department of Community Medicine, Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh, Uttar Pradesh, India. The UHTC of the Department of Community Medicine is located 2 Kms away from the medical college on the Qila road. The area is basically a peri-urban area situated on the outskirts of the city. The study subjects were residents of four registered areas of the UHTC. UHTC catered a total population of 11199 at the start of the study. There were four areas, i.e. Firdaus Nagar, Nagla Qila, Patwari ka Nagla, and Shahanshabad under UHTC. Out of these 4 areas, 2 areas (Firdaus Nagar, Nagla Qila) were chosen for the intervention group and the other 2 areas (Patwari ka Nagla, Shahanshabad) served as the non-intervention group. The population in this area was relatively stable and allowed for follow up visits. Purposive sampling i.e. nonrandom sampling to include subjects that serve the specific purpose was used. Two hundred pregnant women (100 pregnant women from each intervention and non-intervention group) were chosen for the study.

Exclusion criteria were primigravida (because there was lack of baseline data regarding correct knowledge about susceptibility of the low birth weight baby to different conditions to compare with data after BCC Package intervention), high-risk pregnant women, pregnant women who opted to deliver outside Aligarh. Local cultural values and ideas were respected. Confidentiality was assured. All pregnant women were approached individually and an informed consent was taken before collecting data. All primigravida in the intervention group were also informed about the messages of BCC packages, though they were excluded from the study. Proper management or referral was given to women who were found to have any health problem. The study was conducted in three phases (baseline collection of data, intervention phase, follow-up after 7th & 28th day).

Phase I. Baseline collection of data

A house to house visit was made to get the information about pregnant women until 200 pregnant women were enrolled in the study. Data were collected by using pre-designed and pre-tested semi structured questionnaire. It included information regarding identification, socioeconomic status, low birth weight newborn care at home.

Phase II. Intervention phase (only in intervention group)

BCC [7] package was designed focusing on changing the adverse behaviour of pregnant women regarding knowledge about susceptibility of Low Birth Weight to different conditions. The information in this package was given to every individual pregnant woman of the intervention group in the 9th month of gestation repeatedly and self designed pamphlets

containing simple messages in local languages (Hindi, Urdu) were distributed to all study participants. For those who could not read, their literate family members were asked to read for them.

2.1 Behaviour Change Communication Package

One should go for institutional delivery or home delivery by a trained person. Information related to unhygienic condition of delivery and the principle of five cleans recommended under Child Survival Safe Motherhood (C.S.S.M.) national program. Delivery room should be warmed. Immediately wipe the new born with a clean soft pre-warm towel. Use another warm towel to wrap the body in two layers. Check for the temperature of the baby by touching the baby's extremities and abdomen for hypothermia at birth. Ensure adequate clothing covering the head, trunk and limbs. Keep the baby in skin-to-skin contact of mother. Bathing should be avoided for 6 hours after birth. Check for the temperature of the baby by touching the baby's extremities and abdomen. If baby's extremities or abdomen feels cold to touch then skin to skin contact with mother, and any heating source to keep the room and baby warm should be used. If temperature would not increase within 1 hour of home management of hypothermia, transfer the baby to the hospital. During transport place the baby close to the mother's body. Baby should be clothed well and warmth should be maintained during transport. Low birth weight babies are very prone to cold, infection, yellow discoloration of palm and soles, feeding difficulty. For the yellowness of palm and soles consult doctor immediately. Hand washing by the mother and family before handling the baby.

Phase III. Follow-Up

After first week: All mothers who delivered were contacted after one week of delivery. Data were collected about delivery practices – safe and clean delivery practices, physiological variants, prevention of neonatal infection, and prevention of hypothermia, breastfeeding, pre-lacteal feeds, and danger signs in newborns.

After 28th day: Information regarding neonatal care (knowledge regarding danger signs, physiological variants, hypothermia, exclusive breastfeeding, burping) were collected.

2.2 Data Entry and Statistical Analyses

Data entry and statistical analysis were carried out using Epi Info version 3.5.1. Significant difference was determined using Chi-square test or Fisher's exact test. Intervention and non-intervention were also compared after 7th and 28th of delivery days. The impact of Behaviour Change Communication was assessed using relative risk and difference was accepted significant at more than 95% (p value <0.05).

3. RESULTS

Majority (83%) of pregnant women were in the age group of 15-30 years. Most (90.5%) of the pregnant women were Muslim. 72% of pregnant women were illiterate, 18 % were educated up to high school and only 7% were educated above high school. Education of husbands of pregnant women was also low (54% illiterate). The majority of the families (64.5 %) were nuclear. 99% pregnant women were housewives. Most of pregnant women (75%) had more than one live issue (multigravida). 48.5% pregnant women belonged to upper lower class

according to Modified Kuppuswami Scale [8] of socio-economic status. There was no significant difference (p -value>0.05) between the two groups regarding socio-economic status (Table 1).

Table 1. Demographic profile of pregnant women

Variables	Non-intervention N=100	Intervention N=100	χ^2, P-value-
Age			
15-30	86	80	1.3, >0.05
31-45	14	20	
Religion			
Hindu	02	17	13.08, <0.05
Muslim	98	83	
Education of pregnant women			
Illiterate	78	72	0.97, >0.05
Up to high school	16	20	
Above high school	06	08	
Education of husband			
Illiterate	59	49	3.70, >0.05
Up to high school	37	41	
Above high school	04	10	
Occupation of husband			
Unemployed	58	55	0.59, >0.05
Semiskilled	25	24	
Skilled	09	12	
Clerical/shop	08	09	
Type of family			
Nuclear	67	62	0.54, >0.05
Joint	33	38	
Social class			
Upper	00	02	5.79, >0.05
Upper middle	14	16	
Lower middle	30	35	
Upper lower	51	46	
Lower	05	01	

3.1 Correct Knowledge about Susceptibility of Low Birth Weight Infants to Certain Morbidities before BCC Package Intervention

35% of mothers had correct knowledge regarding susceptibility of low birth weight baby to infection. Mothers had low knowledge regarding susceptibility of low birth weight baby to yellow palm and sole and feeding difficulty. 19% mothers had knowledge regarding susceptibility to hypoglycemia. There were no significant differences (p -value>0.05) between the two groups regarding correct knowledge about susceptibility of low birth weight infants to different conditions (Table 2).

3.2 Impact of BCC Intervention among Pregnant Women Regarding Susceptibility of Low Birth Weight Infants to Certain Morbidities

Due to the impact of BCC Intervention knowledge regarding susceptibility of LBW baby to infection was increased to two times. Knowledge regarding susceptibility of LBW baby to yellow palm and sole was increased to four and half times. Knowledge regarding susceptibility of LBW baby to feeding difficulty was increased to seven times and knowledge regarding susceptibility of LBW baby to hypoglycemia was increased to 4.75 times. Knowledge of mother regarding susceptibility of LBW baby to infection, yellow palm and sole, feeding difficulty hypoglycemia were increased (p-value <0.05) in the intervention group due to the impact of the BCC package on the seventh day of follow up and was maintained on the 28th day after delivery (Table 2).

Table 2. Impact BCC package Intervention on correct knowledge about susceptibility of Low Birth Weight to different conditions

Variables	Non-intervention 100		Intervention 100		Impact of BCC relative risk, P – value
	baseline	BCC not given 7 th day 28 th day	baseline	BCC given 7 th day 28 th day	
Infection	30	30 30	37	58 58	1.93, <0.05 1.93, <0.05
Yellow palm and sole	02	08 08	02	36 34	4.5, < 0.05 4.25, < 0.05
Feeding difficulty	03	06 06	02	42 43	7.0, < 0.05 7.17, < 0.05
Hypoglycemia	18	16 16	20	76 72	4.75,<0.05 4.5, < 0.05

4. DISCUSSION

Due to implementation of the BCC Package, we have demonstrated that mothers can be taught and retain some of the risks facing prematurely born or LBW infants. Possessing this knowledge is powerful as mothers have shown they use the information as Datta, et al described that primary health care workers were contacted in 38% of episode of acute respiratory infections in the intervention area, in contrast to only 1% of episodes in the control area. Also the mean duration of infection in the intervention area was significantly lower while the case fatality was about 33% of that in the control area [9]. Dragovich et al. had concluded from their study that when health workers possess knowledge of how to prevent hypothermia this knowledge may not be translated into practice [10]. Prashar et al revealed that knowledge of mothers increased significantly after telling them about care of hypothermia and low birth babies [11]. Similarly, in the present study knowledge of mothers increased significantly. Knowledge of care of LBW babies may be translated in practice, as observed by Datta et al. in Haryana [9]. In a study it was reported that baseline neonatal mortality rate in the intervention and control areas was 62 and 58 per 1000 live births, respectively. In the third year of intervention 93% of the newborns received home based care. Neonatal, infant, perinatal mortality rates in the intervention area (net % reduction) compared with the control area were 62.2%, 45.7% and 71% respectively [12]. In another study it was revealed that reported that change in the percent incidence of morbidities was (i) infections, from 61.6 to 27.5 (ii) care related morbidities (asphyxia, hypothermia, feeding

problems) from 48.2 to 26.3 (iii) low birth weight from 41.9 to 35.2, In the third year, the proportion of correct maternal knowledge was 78.7% and behaviour was 69.7% [13].

Behavioral change communication package designed according to the felt need of the community has favorable impact on the knowledge and safe practices of mothers for neonatal care. This study advocates larger community based behavior change interventional research to save neonates, so that it can help in the formulation of national neonatal care strategy.

5. CONCLUSION

There was a significant impact of BCC package on the behaviour of pregnant women regarding correct knowledge about susceptibility of low birth weight infants to different conditions. BCC Package can be applied through health workers in the community to improve neonatal care that can decrease the morbidity and mortality among infants. There is an urgent need to educate mothers and train health care providers including ANM, ASHA and CMC workers etc. on newborn and early neonatal care.

ETHICAL APPROVAL

Approval for study was passed from the institutional board of study meeting (**28.08.2008, item no. 5**).

SOURCE OF FUNDING

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

ACKNOWLEDGMENT

I would like to express my profound gratitude to all the participants for their co-operation and for their immense faith they reposed in me.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

REFERENCES

1. Ministry of Health and Family Welfare. Health Information of India - 1993. Government of India, New Delhi. 1995;37.
2. Choudhari S, Kulkarni S, Pajnigar F, Pandit AN, Deshmukh S. A logitudinal follow up of development of preterm infants. *Indian Pediatr.* 1991;28:873-880.
3. Taffel S. Factors associated with low birth weight. United States, 1976. *Vital and Health Statistics, DHEW Pub. No. (PHS) 80-1915. NCHS series 21: No. 33; 1980.*
4. Rao PSS, Inbaraj SG, A prospective study of infant mortality and congenital malformations in relation to intra-uterine growth rates in south India, *Indian J Med Res* 1978;67:245-254.
5. Kishore J. National Health Program of India: National Policies and Legislations related to Health. New Delhi: Century Publications. 2010;178–9.

6. Government of India. NRHM 6th joint Review Mission Report. Department of family welfare. Ministry of Health and family Welfare, Government of India; 2009.
7. Communication for behaviour. Indian Journal of Public Health. 2002;46(3):117-119.
8. Meher R, Jain A, Sabharwal A, et al. Deep neck abscess: a prospective study of 54 cases. The Journal of laryngology & Otology. 2005;119:299-302.
9. Datta N, Kumar V, Kumar L, et al. Application of case management to the control of acute respiratory infections in low birth weight infants. Bulletin of the World Health Org. 1987;65(1):77-82.
10. Dragovich D, Tamburlini G, Alisjahbana A, et al. Thermal control of the newborn: knowledge and practice of health professionals in seven countries. Acta Paediatrica 1997;86:645-650.
11. Parashar M, Singh SV, Kishore J, Kumar A, Bhardwaj M. Effect of community-based behavior change communication on delivery and newborn health care practices in a resettlement colony of Delhi, Indian. J Community Med. Jan-March2013;38(1):42-48.
12. Bang AT, Bang R, Baitule SB, et al. Effect of home based neonatal care and management of sepsis on neonatal mortality. Field trial in rural India. The Lancet. 1999;354:1955-1961.
13. Bang AT, Reddy HM, Deshmukh MD, et al. Neonatal and infant mortality in the ten years (1993 to 2003) of the Gadchiroli field trial: effect of home based neonatal care. Journal of Perinatology. 2005;25:S92-S10.

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Peer-review history:

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