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PREFACE

The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is an autonomous, international, philanthropic and non-profit centre for research, education and training as well as clinical service. The Centre is derived from the Cholera Research Laboratory (CRL). The activities of the institution are to undertake and promote study, research and dissemination of knowledge in diarrhoeal diseases and directly related subjects of nutrition and fertility with a view to develop improved methods of health care and for the prevention and control of diarrhoeal diseases and improvement of public health programmes with special relevance to developing countries. ICDDR,B issues two types of papers: scientific reports and working papers which demonstrate the type of research activity currently in progress at ICDDR,B. The views expressed in these papers are those of authors and do not necessarily represent views of International Centre for Diarrhoeal Disease Research, Bangladesh. They should not be quoted without the permission of the authors.

ABSTRACT

The types of birth attendants, methods of cutting and dressing the umbilical cords and their relationship with the incidence of neonatal tetanus for a cohort of 1351 live births occurring between July 1976 and June 1977 in Teknaf, Bangladesh was evaluated. The births were attended by relations of the mother, neighbours or dais (traditional births attendants) in equal proportion. A few births were unattended; trained midwives or physicians attended a negligible number of births.

Bamboo-splits (78%) and razor blades (22%) were most frequently used tools to cut the umbilical cords. There was no significant difference in mortality rate of neonatal tetanus between the groups using bamboo-splits (29 deaths per 1000 live births) or razor blades (21 deaths per 1000 live births). Mortality rate due to neonatal tetanus was 24 deaths per 1000 live births when umbilical cords were tied with a thread with or without application of ash or burnt earth. In a smaller number of cases when the umbilical cords were left untied, the mortality rate of neonatal tetanus was 111 deaths per 1000 live birth. This difference was statistically significant ($P<0.01$). It appears that leaving the umbilical cords untied predisposes the development of neonatal tetanus.

INTRODUCTION

Two-thirds of all births in the world are delivered by untrained attendants (1). This is especially true in most of the developing countries where people live in rural areas, and mothers may deliver alone or with assistance from their relations or neighbours. Traditional birth attendants (TBA) who are known as mohtamyae in Thailand, hilot in the Philippines, dukun bayi in Indonesia, bidan kampung in Malayasia and dai in India, Pakistan and Bangladesh have been found to attend the majority of births in countries of Asia, Africa and Latin America (2-4). In Bangladesh dais are generally widows and older women, usually without any formal training who work for friends, neighbours and relatives (5).

Neonatal tetanus is a dangerous infection with high case fatality rate throughout the world. Tetanus neonatorum accounted for little over one-fourth of all infant deaths found in two studies carried out in Bangladesh (6-7). In most cases the site of entry of the tetanus organism is through the infected umbilical stump (8). The disease is chiefly a consequence of insanitary methods of handling the umbilical stump during child-birth. The principal sources of neonatal tetanus infection are the prevalent practice of applying substances like cow-dung, ash, ghee, powdered pepper, and turmeric in the umbilical cords and the use of unsterile instruments for cutting (9-13).

The purpose of this paper was to describe types of birth attendants, and the cord-care practices and determining their relationship with the incidence of neonatal tetanus.

THE STUDY AREA

The study area in Teknaf thana (an administrative unit) is under Cox's bazar subdivision of Chittagong district. Through a field clinic located in Teknaf thana head headquarters, the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B, the former Cholera Research Laboratory) has been conducting demographic surveillance and providing treatment of diarrhoeal patients in a clinic since 1974. The basic design and operation of the Teknaf field project was described in details in a previous study (14). About 98 percent of the population are Muslims. The Hindus and two tribal groups - the Mung and the Chakmas constitute the remaining population. Only 10 percent of the population aged 5 years and over have formal school education. The major occupations are cultivation and fishing.

MATERIALS AND METHODS

A cohort of 1351 live births taking place between July 1, 1976 and June 30, 1977 was followed in the longitudinal demographic surveillance system of Teknaf Dysentery Project (TDP). All births, deaths, marital events and migrations have been registered in this project area since 1976. Relevant data for this paper were obtained by matching birth and death reports in a population of 25,000. Neonatal and postneonatal mortality rates were defined as the number of neonatal deaths during the first 28 days, and postneonatal deaths, during 29 days to 12 months per 1000 live births. The common symptoms of deaths preceding tetanus were described as spasm or convulsion (khichuni in local dialect) and or frequent change in the colour of body varying from normal to blue. Inability of the newborn to suckle after 4-5 days of birth were often associated with these symptoms.

The data collection system was as follows. A male high school graduate Field Assistant residing in his village of work visits every household once in every seven to ten days. He fills out the necessary reports with the help of a female worker. The Field Assistant normally contacts the head of the households or a senior member to collect relevant information. The work of a Field Assistant is supervised by a Field Surveillance Assistant. The overall responsibility of the field activities rests with a Field Surveillance Supervisor. A physician checks and verifies the completed death reports to arrive at the underlying cause of death which often necessitates a visit to the household of the deceased.

RESULTS

Table 1 shows the distribution of live births according to type of birth attendants. Relations of the mother attended 30 percent of the births, dais or TBAs 32 percent and neighbouring women 35 percent. The remaining births were unattended and managed by the women themselves except only six births delivered by trained midwives or physicians.

Bamboo splits were used to cut the umbilical cords in 78 percent and razor blades in 22 percent of the births (Table 2). Trained midwives or physicians used only razor blades in all the six deliveries they attended. Other types of birth attendants used bamboo splits or razor blades with nearly equal frequency.

76 percent of the umbilical stumps were tied with a thread, 20 percent tied with a thread in addition to application of ash or burnt earth as dressing and four percent were left untied (Table 3).

TABLE 1

DISTRIBUTION OF LIVE BIRTHS BY TYPE OF BIRTH ATTENDANTS IN TEKNAF

Type of Birth Attendants	Number	Percent
All	1351	100.0
Birth attendants related to the mothers	411	30.4
Mothers	75	5.6
Grand-mothers	94	7.0
Mother-in-laws	138	10.2
Other relations	104	7.7
Birth attendants not related to the mothers	897	66.4
Dais (Traditional Birth Attendants)	425	31.5
Neighbours	466	34.5
Trained midwives/Physicians	6	0.4
Unattended mothers	43	3.2

TABLE 2

LIVE BIRTHS BY METHOD OF CUTTING THE UMBILICAL CORDS AND TYPE OF BIRTH ATTENDANTS IN TEKNAF

Type of Birth Attendants	No. of Live Births	Method of Cutting the Umbilical Cords (Percent)	
		Razor Blades	Bamboo Splits
All	1351	21.6	78.4
Relation of Mothers	411	18.7	81.3
Dais (TBAs)	425	25.9	74.1
Neighbours	466	18.7	81.3
Trained midwives/Physicians	6	100.0	0.0
Unattended mothers	43	27.9	72.1

TABLE 3

LIVE BIRTHS BY METHOD OF DRESSING THE UMBILICAL CORDS AND TYPE OF BIRTH ATTENDANTS IN TEKNAF

Type of Birth Attendants	No. of Live Births	Methods of Dressing the Umbilical Cords (Percent)		
		Applied Ash or Burnt Earth	Tied with Thread	Tied with Thread and Applied Ash or Burnt Earth
All	1351	4.0	76.1	19.9
Relation of mothers	411	6.3	78.8	14.8
Dais (TBAs)	425	6.1	71.3	22.6
Neighbours	466	0.0	83.5	16.5
Trained midwives/Physicians	6	0.0	66.7	33.3
Unattended mothers	43	4.7	18.6	76.7

The overall neonatal mortality rate due to tetanus was 27 per 1000 live births (Table 4). Mortality rate was 21 per 1000 live births among the neonates whose umbilical cords were cut by razor blades compared to 29 among those cut by bamboo splits. These rates are not statistically significant.

Neonatal mortality rate due to tetanus was 22 per 1000 live births when the umbilical cords were tied with a thread along with application of ash or burnt earth compared to 24 when tied with thread only without application of ash or burnt earth (Table 5). Mortality rate of tetanus was 24 per 1000 live births when umbilical cords were tied with a thread compared to 111 when left untied. The difference was highly significant at $P<0.01$.

DISCUSSION

The great majority of the births in Teknaf study area are delivered by untrained attendants, comprising mainly of relations of the mother, traditional birth attendants and neighbouring women. We have noted that dressing the umbilical cords without tying them a thread resulted in a significantly higher rate of neonatal mortality due to tetanus. The umbilical cords are tied with the belief that such tying prevents oozing of blood. Ash or burnt earth is applied with similar beliefs that these hasten the healing. All these materials used to cut, tie or dress the umbilical cords are rarely known to be clean and sterile. Similar practices have been found to be present all over rural Bangladesh in a previous investigation (15).

TABLE 4

NEONATAL TETANUS DEATHS BY METHOD OF CUTTING THE UMBILICAL CORDS IN TEKNAF

Method of Cutting the Umbilical Cords	No. of Live Births	Neonatal Tetanus Deaths	
		No.	Rate[a]
All methods	1351	37	27.4
Razor blades	292	6	20.6
Bamboo Splits	1059	31	29.3

a Per 1,000 Live Births.

TABLE 5

NEONATAL TETANUS DEATHS BY METHOD OF DRESSING THE UMBILICAL CORDS IN TEKNAF

Method of Dressing the Umbilical Cords	No. of Live Births	Neonatal Tetanus Deaths	
		No.	Rate[a]
All Methods	1351	37	27.4
Tied with Thread and applied Ash or Burnt Earth	269	6	22.30
Tied with Thread but Ash or Burnt Earth not applied	1028	25	24.32
Tied with Thread, with or without application of Ash or Burnt Earth	1297	31	23.9
Applied Ash or Burnt Earth	54	6	111.1

a Per 1,000 Live Births.

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