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## An assessment of antenatal care received by Bhutanese women: A retrospective review of maternal and child health handbooks

Kencho Zangmo

*Jigme Dorji Wangchuck National Referral Hospital, Bhutan, kenchozangmo84@gmail.com*

Tshering Dema

*Tsheringdema00@gmail.com*

Kinga Om

*Kinga1378@gmail.com*

Choden Gaylek

*choden.gaylek@gmail.com*

Lali Maya Karki

*lalimaya36@gmail.com*

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## **An assessment of antenatal care received by Bhutanese women: A retrospective review of maternal and child health handbooks**

<sup>1\*</sup>KenchoZangmo, <sup>2</sup>Tshering Dema, <sup>3</sup>Kinga Om, <sup>4</sup>Choden, <sup>5</sup>Lali Maya Karki

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### **Abstract**

**Introduction:** Providing quality antenatal care not only increases the likelihood of early detection of maternal health and socioeconomic factors linked to untoward pregnancy outcomes but also prepares women for safe childbirth and for possible emergencies during pregnancy. Therefore, this study assessed antenatal care received by pregnant women against the national guideline on antenatal care services.

**Methods:** This descriptive cross-sectional study was conducted at the national referral hospital in Bhutan. A convenience sample of 571 maternal and child health handbooks (records) of pregnant women coming to deliver at the hospital in July and August 2020 were included.

**Results:** Approximately 1/3<sup>rd</sup> of the sample had initiated their antenatal care on time and more than half of them had fewer than the recommended number of visits. In addition, 3% of women had their ANC initiated in the third trimester. Among the care practices recommended to be done during antenatal visits, those that required more skill were less often provided compared to those of general history taking and physical assessment.

**Conclusion:** The antenatal care that pregnant women in Bhutan received shows there is room for improvement, especially to decrease the late initiation of ANC. The policies and programmes to strengthen maternal and child health should move from ensuring accessibility to enhancing the quality of care. In addition, systems that ensure an adequate number of visits and timely initiation of care need to be reinforced along with improving the skills of ANC providers.

**Keywords:** *Antenatal care, antenatal care components, timely initiation, adequacy of number of ANC visits.*

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<sup>1</sup>M.Sc. Nursing [Kenchozangmo84@gmail.com](mailto:Kenchozangmo84@gmail.com).

<sup>2</sup> M.BA (HA) [Tsheringdema00@gmail.com](mailto:Tsheringdema00@gmail.com).

<sup>3</sup> M.Sc. Nursing [Kinga1378@gmail.com](mailto:Kinga1378@gmail.com)

<sup>4</sup> Dip. GNM [choden.gaylek@gmail.com](mailto:choden.gaylek@gmail.com)

<sup>5</sup> Dip. GNM [lalimaya36@gmail.com](mailto:lalimaya36@gmail.com)

**\*Corresponding author**

Affiliation: Department of Nursing, Jigme Dorji Wangchuck National Referral Hospital, Thimphu, Bhutan

## **Introduction**

The Sustainable Development Goal (SDG) related to maternal and child health sets a target for global maternal mortality of less than 70 per 100,000 live births.<sup>1</sup> Complications during pregnancy, childbirth, and postnatal period are the leading causes of maternal and newborn mortality and morbidity, according to the World Health Organization [WHO].<sup>2</sup> The causes of maternal and newborn deaths are often multi-factorial, involving complex interactions of several medical, obstetric, health service, and social factors. However, it is possible to identify precursors, early signs, and risk factors to avert the majority of unsuccessful outcomes of pregnancy through quality Antenatal Care (ANC) services.<sup>3,4,5</sup> The literature suggests that ANC alone can reduce maternal mortality by 20%, when the services provided are of good quality.<sup>6</sup> In addition, perinatal mortality was two-times higher among those receiving  $\leq 1$  ANC visit compared to those receiving  $\geq 3$  ANC visits.<sup>7</sup> However, despite numerous benefits of good quality ANC, globally 86% of women have access to at least one ANC visit and only half of all pregnant women receive the recommended number needed for quality care.<sup>3</sup>

The WHO antenatal care package includes early detection of maternal health and socioeconomic factors likely to increase untoward pregnancy outcomes; providing interventions proven to be effective in averting risk factors; and educating women about healthy pregnancy; safe birth; and emergencies during pregnancy.<sup>8</sup> Although the content of ANC service package may vary among developing countries, most of these countries follow the WHO ANC package which is considered the standard of antenatal care. The packages include: (1) timely initiation; (2) adequate number visits; and (3) receiving interventions proven vital during each visit.

Bhutan has achieved a significant reduction in maternal and infant mortality rates over the past decade<sup>9</sup>. However, 21 out of every 1000 live births continue to die within the first month of life and 75% of these deaths are the result of prematurity and associated childbirth complications, some of which can be prevented with good ANC and postnatal care services.<sup>9</sup> The era of Millennium Development Goals for Bhutan was mostly focused on antenatal care coverage geared towards enhancing maternal and child health<sup>10</sup>. Bhutan reported 84.9% ANC coverage between 2013 and 2015.<sup>10</sup> The target achieved is commendable, especially given the difficult geographical terrain that limits accessibility and is a large challenge for the country's health care system. However, if the nation is to achieve the SDGs related to maternal and child health by supplementing the already existing strategies for enhancing ANC coverage, assessing

the quality of care is now the need. Therefore, this study assessed the components of antenatal care received by pregnant women against the national guidelines on antenatal care services. Aligned with the WHO ANC standards, our national guideline recommends timely initiation of ANC (initiating as early as possible before 12 weeks of gestation) and attending an adequate number of ANC visits (a minimum of 8 visits during pregnancy: 1 in 1<sup>st</sup> trimester, 2 in 2<sup>nd</sup> trimester, 5 in 3<sup>rd</sup> trimester) for women to receive the recommended ANC standard.

## **Methods**

### ***Study design and setting***

This cross-sectional study was carried out at Jigme Dorji Wangchuck National Referral (JDWNR) hospital where approximately 50% of the nation's births occur. The hospital reported approximately 5000 births in year 2020. The center receives pregnant women whose ANC was booked in different health centers in the country, either through a referral from a lower health facilities or by women's own choice. Thus, assessment of this sample at the national referral hospital represents ANC received at different tiers of health facilities in the country.

### ***Sample size***

Data were gathered from all the Maternal and Child Health (MCH) handbooks of pregnant women admitted for either vaginal or cesarean birth in July and August 2020. Every pregnant woman who receives ANC is issued with a MCH handbook to record all services received throughout pregnancy. Admissions that did not result to birth were excluded from the study as those records might not provide complete ANC service information. The resulting convenience sample was 571 MCH handbooks.

### ***Data management***

The data collected from MCH handbooks were entered into a structured paper questionnaire, followed by assigning unique serial numbers of each questionnaire and checking for completeness of the data collected. The data were then double entered into an Epidata (3.1) file and validated. Statistical software STATA version IC/14 was used for data analysis.

## **Results**

### ***Sample characteristics***

The 571 MCH handbooks were from pregnant women who were admitted and gave birth at JDWNR hospital between July and August 2020. There were 205 women who received ANC

from the national referral hospital, 8 from two regional referral hospitals, and 358 from district hospitals and primary health centers. The women had a mean travel time of 20 minutes to access the nearest health facility. The age of women ranged from 16 to 45 years old with a mean age of 28 (*SD*-5.4) years. Almost half of the participants (42.2%) were pregnant for the first time and 57.8% of them were multiparous; of the latter, 11.5% had a complication in a previous pregnancy (Table 1). Of all participants, 56.2% were housewives, 17.3% were government employees, 17.7% private employees, and 8.8% were self-employed. The majority (73.2%) of women had completed secondary education or above.

**Table 1: Socio demographic characteristics of the participants**

<b>Characteristics</b>	<b><i>f</i></b>	<b>%</b>
<b>Age</b>		
≤ 19 yrs.	27	4.7
20 to 30 yrs.	362	63.4
31 – 35 yrs.	131	23.0
> 35 yrs.	51	8.9
<b>Occupation</b>		
Housewives	321	56.2
Government	99	17.3
Private	101	17.7
Self-employed	50	8.8
<b>Education</b>		
None	90	15.8
Non-formal education	16	2.8
Primary	47	8.2
Secondary	312	54.6
Tertiary and above	106	18.6
<b>Parity</b>		
Primiparous	241	42.2
Multiparous	330	57.8
<b>Previous complicated pregnancy</b>		
Yes	38	11.5
No	292	88.5

## **Description of antenatal care services received**

### ***Initiation of ANC visit***

Overall, women initiated their ANC at around 13 weeks of gestation (Table2). Timely initiation of ANC, defined here as initiating ANC before 12 weeks of gestation, occurred among 39.6% of the sample. In addition, 59.5 % initiated ANC in the first trimester (up to 13 weeks of gestation) and 3 % in the third trimester.

**Table 2: Initiation of antenatal care**

<b>Timely initiation of ANC</b>	<b><i>f</i></b>	<b>%</b>	<b>M (SD)</b>
Timely initiation of ANC	226	39.6	
Late initiation of ANC	345	60.4	
ANC initiated in 1 <sup>st</sup> trimester	340	59.5	
ANC initiated in 2 <sup>nd</sup> trimester	214	37.5	
ANC initiated in 3 <sup>rd</sup> trimester	17	3.0	
Overall (period of gestation at which ANC was initiated)			13.9 (5.4)

### ***Adequacy of number of antenatal care visits***

The mean number ANC visits among women was 6.9 visits (*SD*-1.5). The total number of ANC visits, computed as adequate or inadequate showed 62% of the participants with an inadequate number of visits (Table3). Looking into details of the adequacy of visits during each trimester showed 55.9% with adequate visit during first trimester, 84.8% adequate in second trimester, and 42% adequate in third trimester.

**Table 3: Adequacy of number of antenatal care visits**

<b>Adequacy of number of visits</b>	<b><i>f</i></b>	<b>%</b>
Overall adequacy		
Adequate	217	38.0
Inadequate	354	62.0
Trimester adequacy		
First trimester	319	55.9
Second trimester	484	84.8
Third trimester	240	42.0

### ***Key care practices during ANC visits***

The key interventions provided during every antenatal visit included history taking, physical examination, and treatment interventions. A medical history was taken on 99.6% of pregnant women and 93.3% had their weight recorded at every visit (Table 4). The majority (95.1%) of women also had their blood pressure checked and recorded at every visit. However, only 17.3% of women had their fetal heart rate recorded at every visit from 14 weeks of gestation onwards.

Folic acid was taken by 31.3% during the current pregnancy. In addition, 22.9% of the women were not provided with information about danger signs during pregnancy and 12.4% did not have their birth preparedness plan documented.

**Table 4: Vital interventions provided during each visit**

<b>Interventions</b>	<b><i>f</i></b>	<b>%</b>
Medical history including past obstetric history during booking visit	569	99.7
Blood pressure (every visit)	543	95.1
Urine albumin (every visit)	156	27.3
Urine sugar (every visit)	149	26.1
Blood Hemoglobin (every month)	224	39.2
Maternal weight (every visit)	533	93.4
Fundal height measurement (every visit)	279	48.9
Fetal heart rate assessment (every visit from 14 weeks of gestation)	99	17.3
Folic acid (provided during current pregnancy)	179	31.4
Elemental iron-folic acid (provided starting from 2 <sup>nd</sup> trimester )	565	98.9
Birth preparedness planning	500	87.6
Danger signs	440	77.1

## Discussion

The assessment of ANC that pregnant women received was measured in three components consistent with ANC service guidelines in the country, which align with WHO recommendations about the standards of ANC: (1) the timely initiation of ANC; (2) an adequacy of number of visit; and (3) vital interventions received during each visit. The overall summary regarding antenatal care in Bhutan indicates that there is ample room for improvement, especially with the elements of care provided during each ANC visit. Increasing the quality of care women receive during antenatal visits coupled with already existing good coverage of ANC will assist in achieving the nation's maternal-child health goals that are aligned with SDGs.

Bhutan's maternal and child health handbook guideline recommends women initiate their ANC as early as possible before 12 weeks of gestation. The current study showed only 39.6% of pregnant women initiating antenatal care in this timeframe, while more than half of the sample initiated their ANC later than recommended time. This finding is similar to literature on late

ANC initiation from other parts of the world. A study from Myanmar showed a late initiation (defined as initiation later than 12 weeks of gestation) rate of 56.3%.<sup>11</sup> Another study from Nepal showed a late initiation rate of 30%, with late initiation defined as later than 4 months after conception.<sup>12</sup> While the late initiation rate in our study is similar to Myanmar, the lower rate reported from Nepal is mainly due to a difference in definition of late initiation'. In addition, the current study shows 3% of the women initiating their ANC as late as the third trimester; which severely limits the opportunity to detect and avert factors that may contribute to untoward pregnancy outcomes.

With regards to adequacy of number of ANC visits, our study showed 62% of the women with an inadequate number of visits, defined in this study as fewer than the recommended 8 ANC visits. The number of visits during each trimester showed 44.1%, 15.2%, and 58% had an inadequate number of visits during 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> trimesters respectively. Studies of the adequacy of ANC visits in India and Myanmar showed higher levels of inadequate visit numbers compared to ours. A national survey report from India showed 58.8% with inadequate ANC; inadequacy was defined as less than 4 visits.<sup>13</sup> A health survey report from Myanmar showed 78% inadequacy when the adequacy was defined like our definition as a minimum of 8 visits.<sup>14</sup>

Among 12 care practices provided during the ANC visits, obtaining medical history including past obstetric history; providing elemental iron-folic acid; measuring blood pressure; and measuring maternal weight were provided most often. However, assessing fetal heart rate (FHR) at every visit starting from 14 weeks of gestation was the least practiced intervention with only 17.3% of the women's fetal heart rates assessed and recorded as recommended. Moreover, it was noted that FHR, which is very important component of monitoring fetal wellbeing during each visit was done more consistently at greater gestational age compared to lesser gestational age. Furthermore, most women's FHR were not assessed in the beginning of second trimester and recorded as only palpable and not palpable when FHR is supposed to be recorded in beats per minutes. Assessing urine sugar and albumin at every visit and monthly blood hemoglobin were also among some of the least provided interventions. These parameters are useful for detecting early signs of maternal anemia, gestational hypertension, and gestational diabetes; which if not detected and managed in a timely way can result in complications for both mother and fetus. In our context, severe pre-eclampsia is the second leading cause of life threatening maternal conditions based on a maternal near-miss review done in 2018-2020 (unpublished

report by Ministry of Health, Bhutan). In addition, gestational hypertension is a major factor leading to preterm birth. Measurement of fundal height at every visit was done among only half of the sample (48.9%) and omission of this care practice reduces the chance to detect deviation from normal growth and development of the fetus.

As with all retrospective records-based studies the reader is reminded that aspects of ANC practice may have been given to the women but that the staff providing it failed to record it, because they were too busy or distracted.

### **Conclusion and recommendations**

The study suggests there is room for improvement of ANC in Bhutan. The findings are consistent with the existing literature on quality of ANC globally. The ANC coverage at the global level is 86% yet only half of those women receive the recommended indicators of quality care.<sup>3</sup>Therefore, policy makers and care providers should now move from ensuring accessibility to improving the content of antenatal care. Half of Bhutanese pregnant women initiated ANC late, some as late as the third trimester and about 2/3<sup>rd</sup> of them received an inadequate number of visits. Policies and programmes are needed to strengthen the quality of ANC, especially the elements of care provided. Disparity in the provision of elements of care provided during ANC visit needs to be looked into; both in terms of ensuring the care elements based on the best evidence about their impact on outcomes and that the skills of care providers are enhanced to provide best practices.

### **Conflict of interest**

The authors are affiliated with JDWNR hospital where the study took place.

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