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KNOWLEDGE AND SKILLS OF AUXILIARY NURSE AND MIDWIVES (ANMS) ON IDENTIFICATION OF BIRTH DEFECTS, DEVELOPMENTAL DELAYS AND DISABILITIES AMONG PRESCHOOL CHILDREN IN WEST BENGAL

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ABSTRACT

Background: Auxiliary Nurse and Midwives (ANMs) are one of the key functionaries of healthcare system. They play an important role in health screening of children. Estimates in India suggest that 6% of children are born with birth defects and 10% of them suffer from developmental delays and disabilities. The study aimed to assess the knowledge and skills of ANMs on identification of birth defects, developmental delays and disabilities among preschool children in West Bengal and to find out the potential demographic variables associated with their knowledge and skills. Research method: Descriptive cross-sectional design was adopted. Non-probability purposive sampling technique was used for selecting 100 ANMs from three selected blocks of Nadia, West Bengal. Self-administered questionnaire and observation checklist was used to assess their knowledge and skills respectively. Results: Study revealed that more than half of ANMs had average knowledge score and skill score. Mean knowledge score was 16.52 with SD 3.11 and mean skill score was 18.50 with SD 3.91. Of all domains, Knowledge regarding developmental delays(mean % of 50.80) was lowest. Maximum skill score was observed in physical examination(54.8%) and lowest skill score was observed in the domain of birth defects (mean % 46.85). Statistically significant association was found among knowledge score with educational level and skill score with working experience. Conclusion: Researcher concluded that continuing education may be an effective way to improve their knowledge and skills and will make them more competent and confident in early identification of birth defects, developmental delays and disabilities.

Keywords: ANMs, Knowledge, Skill, Birth Defects, Developmental Delays and Disabilities

INTODUCTION

Auxiliary Nurse and Midwives (ANMs) play major role in improvement of the health outcome of individuals at family and community level (MWCD,2013). They are the key functionaries who are responsible for providing Reproductive Child Health (RCH) services in the rural healthcare system and interacts directly with the community at large for sustainable outcome. Sub centre, which facilitates as the first contact point between the primary health care system and the community, especially at village level, are manned by ANMs(Ertem, Atay, Dogan, *et al.* 2007). Role of this frontline health workforce in influencing child health and development cannot be undermined. It is well known that millions of children under-five years of age in the country still do not receive the appropriate care and support to become physically healthy, mentally alert and emotionally secure (Gupta, Kumar, Khera and Sankar, 2013). Prevention, early detection of diseases/disabilities and early intervention will may improve their health outcome. This is not only includes identification but also extends to early management of birth defects, developmental delays and disabilities (Khurmia, Khera, 2013).

Most of the babies have limited access to receive effective treatment for their clubfoot and will grow up with severe disability as a consequences need to improve the communication skills of clinicians/ health

care providers offering treatment to children with clubfoot at the clinics (Zobaer, Haque, Md. M., Bhuiyan, Md R., Islam, Md, S., Haque, Islam, ASM, Pradhania, Md. S. 2015).Cleft lip and cleft palate are considered one of the most common birth defects that possess significant medical, psychological, social and financial implications on the affected individuals and families, in addition to the aesthetic disfigurement, a child with cleft lip and/or palate suffers substantial functional morbidity such as restricted maxillofacial growth, speech anomalies, swallowing and feeding difficulties, hearing loss and/or recurrent ear infections. Although not generally life-threatening, living with a cleft elicits a significant health burden (Eman & WindsorlL Cynthia (2014).

Early detection is a vital component in providing appropriate support for deaf and hearing impaired babies that will help them to enjoy equal opportunities in society alongside all other children (Venkatachalam, Dinesh, Gupta and Agarwal, 2011). AYJNIHH, Mumbai, in 1985, conducted a 3 years project on screening pre-school children for early identification and intervention of hearing loss, using the high risk register (HRR) approach (Samim, 2004).

Children who survive and live with birth defects are faced with the increased risk of developing lifelong physical, cognitive and social challenges on which medical intervention and other supportive services have little impact hence early detection and early intervention can improve outcome of children (Maheswari & Mhaskar, 2014). The study aimed to assess the knowledge and skills of ANMs on identification of birth defects, developmental delays and disabilities among preschool children in West Bengal and to find out the potential demographic variables associated with their knowledge and skills.

MATERIALS AND METHODS

Study type and design: Descriptive cross-sectional design was adopted.

Sampling technique:Non-probability purposive sampling technique was used for selecting 40 ANMs of Krishnagar-I Block, 30 from Santipur Block and 30 from Nakashipara Block of Nadia District, West Bengal.

Study duration: Study was conducted for the period from July 2014 to August 2016. Data was collected from 1st November 2015 to 31st December 2015.

Study tools and technique: Interview schedule was used to collect demographic profile of ANMs regarding age, general qualification and working experience. Structured knowledge questionnaire consisting of 30 questions was used to assess knowledge. According to domain 6 questions from concept of disease, 12 questions from birth defects, 5 questions from developmental delays and 7 questions from disabilities was adopted. Each correct answer was accorded 'one' (1) score and wrong answer 'zero' (0) score. So the maximum possible score was 30 with a minimum of zero (0) in structured knowledge questionnaire. According to suggestions of the experts ANMs was divided into four grades as far as the knowledge of ANMs are concerned. Scored acquired by ANMs less than <15 (50%) was grade as 'poor knowledge', score 15-19 (50-59%) was graded as 'average knowledge', score 20-24(60-79%) was graded as 'good knowledge' and score 25-30 (≥80%) was graded as 'excellent knowledge'. Observation checklist for assessing skills of ANMs consisting of 39 steps that must be performed during physical examination of preschool children. According to domain 5 steps for general, 14 steps for birth defects, 11 steps for developmental delays and 9 steps for disabilities identification was adopted. Each correct step was accorded 'one' (1) score and wrong step 'zero' (0) score. So the maximum possible score was 39 with a minimum of zero (0) in observation checklist. According to suggestions of the experts ANMs were divided into four grades as far as the skills of ANMs are concerned. Score acquired by ANMs less than <15 (<50%) was graded as 'poor skill', score 15-23 (50-59%) graded as 'average skill', score 24-31 (60-79%) graded as 'good skill' and score 32-39 (≥80%) graded as 'excellent skill'. Tools were validated by experts of different fields. Linguistic validation was established by respective language experts.

Institutional Ethics Committee approval was obtained. After obtaining administrative permission of respected settings, interview schedule, self-administered questionnaire and observation checklist were used to assess their background characteristics, knowledge and skills respectively. The investigator made a separate and comfortable sitting arrangement for confidentiality. After taking informed written consent from all the

participants, data collection was done. The investigator had arranged a hall to conduct examination to collect data on knowledge, and a separate room was arranged for physical examination of children to identify skills using structured observation checklist.

RESULTS

A large number of respondents (48%) were at and above 32 -38years of age (Figure 1).

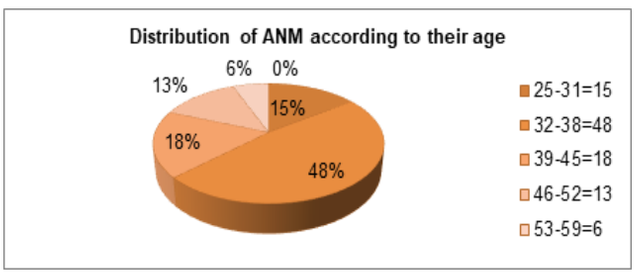

Figure 1: Pie diagram showing percentage distribution of the ANMs according to their age. (n=100)

Majority of respondents (39%) were at and above the level of higher secondary education (Figure 2).

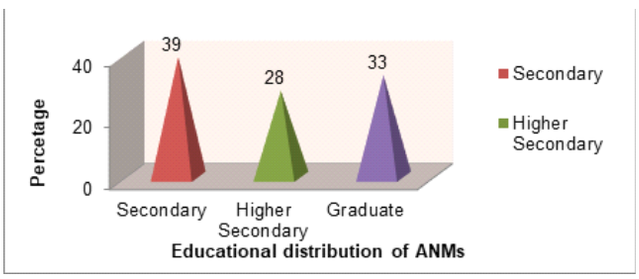

Figure 2: Pyramid diagram showing percentage distribution of ANMs according to their educational qualification.

Maximum respondents (65%) were experience 1-7 years of experience (Figure 3).

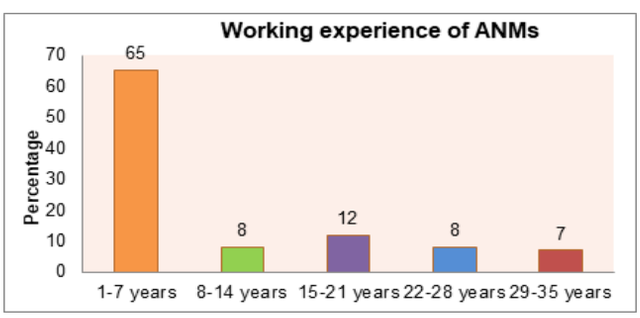

Figure 3: Bar diagram showing percentage distribution of ANMs according to their experience.

More than half of the (60%) ANMs had average knowledge regarding identification of birth defects, developmental delays and disabilities in preschool children (Table 1).

Table 1: Frequency and percentage distribution of the ANMs according to their knowledge scores. (n=100)

Category	**Range of knowledge score obtained (% of total score)**	**Frequency**	**Percentage**
Excellent	25 - 30 (≥80%)	Nil	Nil
Good	20-24 (60-79%)	18	18
Average	15 -19 (50-59%)	60	60
Poor	<15 (<50%)	22	22

Maximum possible score: 30, Minimum possible score: 0

Maximum 66% ANMs had good knowledge in domain of birth defects, 03% ANMs had poor knowledge in developmental delays (Table 2).

Table 2: Frequency and percentage distribution of the ANMs according to domain wise knowledge scores (Concept of birth defects, developmental delays and disabilities). (n=100)

Category of knowledge scores (Concept of birth defects, developmental delays and disabilities).	**Frequency**	**Percentage**
Excellent and good knowledge	18	18
Average knowledge	60	60
Poor knowledge	22	22
Category of knowledge scores (Birth defects)		
Excellent and good knowledge	66	66
Average knowledge	34	34
Poor knowledge	Nil	Nil
Category of knowledge scores (developmental delays)		
Excellent and good knowledge	52	52
Average knowledge	45	45
Poor knowledge	03	03
Category of knowledge scores (Disabilities)		
Excellent and good knowledge	26	26
Average knowledge	59	59
Poor knowledge	05	05

Mean knowledge score was 16.52 with a SD of 3.11 indicating that the group was heterogeneous as far as their knowledge was concerned (Table 3).

Table 3: Mean, median and standard deviation of knowledge scores of ANMs. (n=100)

Variables	Mean	Median	SD
Knowledge scores	16.52	17	3.11

Maximum mean % of knowledge score (59.16%) was observed in the domain of birth defects.Among domain maximum mean % of knowledge score (65.00%) was observed in the domain of cleft lip and cleft palate (Table 4).

Table 4: Domain wise total knowledge score of ANMs regarding identification of birth defects, developmental delays and disabilities in terms of range, mean, mean percentage and standard deviation. (n=100)

Sl. No.	Domain	Maximum possible score	Mean ± SD	Mean %
1.	Concept of disease	6	3.45 ± 1.18	58.66
2.	Birth defects	12	6.47 ± 1.61	59.16
2.a	Congenital cataract	3	1.74 ± 0.82	58.00
2.b	Cleft lip & cleft palate	3	1.95 ± 0.70	65.00
2.c	Congenital heart disease	3	1.70 ± 0.67	56.66
2.d	Clubfoot	3	1.74 ± 0.76	58.00
3.	Developmental delays	5	2.54 ± 1.05	50.80
4.	Disabilities	7	3.78 ± 1.24	54.00

More than half of the (64%) ANMs had average skill regarding physical examination for identification of birth defects, developmental delays and disabilities in preschool children (Table 5).

Table 5: Frequency and percentage distribution of the ANMs according to their skill scores. (n=100)

Category	Range of skill scores obtained (% of total scores)	Frequency	Percentage
Excellent	32-39 (≥80%)	01	01
Good	24-31 (60-79%)	08	08
Average	16-23 (50-59%)	64	64
Poor	<15 (<50%)	16	16

Maximum possible scores: 39,Minimum possible score: 0

Maximum 76% ANMs had average skills in domain of birth defects (Table 6).

Table 6: Frequency and percentage distribution of the ANMs according to domain wise skill scores

(General steps, birth defects, developmental delays and disabilities) (n=100)

Category of skill scores (general steps)	Frequency	Percentage
Excellent and good skill	24	24
Average skill	68	68
Poor skill	08	08
Category of skill scores (Birth defects)		
Excellent and good skill	08	08
Average skill	76	76
Poor skill	16	16
Category of skill scores (developmental delays)		
Excellent and good skill	07	07
Average skill	67	67
Poor skill	26	26
Category of skill scores (disabilities)		
Excellent and good skill	04	04
Average skill	72	72
Poor skill	24	24

Mean skill score was 18.50 with a SD of 3.91 indicating that the group was heterogeneous as far as their knowledge was concerned. (Table 7)

Table 7: Mean median and standard deviation of skill scores of ANMs. (n=100)

Variables	Mean	Median	SD
Skill scores	18.50	19	3.91

Maximum possible score: 39, Minimum possible score: 0

Maximum mean % of skill score (54.80%) was observed in the domain of general steps of physical examination of

children.Among domain maximum mean % of skill score (62.50%) was observed in the domain of cleft lip and cleft palate (Table 8).

Table 8: Domain wise total skill score of ANMs regarding identification of birth defects, developmental delays and disabilities in terms of range, mean, mean percentage and standard deviation. (n= 100)

Sl. No.	Domain	Maximum possible score	Mean ± SD	Mean %
1.	General steps	5	2.74 ± 0.98	54.80
2.	Birth defects	14	6.56 ± 2.10	46.85
2.a	Congenital cataract	7	2.89 ± 1.31	41.28
2.b	Cleft lip & cleft palate	2	1.25 ±0.77	62.50
2.c	Congenital heart disease	4	1.81 ± 1.24	45.25
2.d	Clubfoot	1	0.61 ± 0.49	61.00
3.	Development al delays	11	4.82 ± 1.81	48.31
4.	Disabilities	9	4.38 ± 1.31	48.66

Weak positive correlation between knowledge score and skill score was found, as evident (r = 0.49) (Table 9).

Table 9: Correlation of knowledge and skills of ANMs regarding identification of birth defects, developmental delays and disabilities in preschool children. (n=100)

Score	Mean	SD	Mean difference	*r - value*
Knowledge	16.94	3.11	1.56	0.49
Skills	18.50	3.91		

** Values are significant when Pearson 'r' test statistic: r=0.49, p >0.001*

Statistically significant association was found between knowledge score ANMs and their educational qualification indicating that knowledge of ANMs was dependent on educational qualification (Table 10).

Table 10: Bivariate analysis(using Pearson's Chi square) showing the association of knowledge Scores with age, educational qualification and working experience of ANMs. (n =100)

Demographic variables	Knowledge score <Median	≥Median	Total	Values of χ^2	Significance
Age					
<35	11	23	34	0.47	Not significant
≥35	26	40	66		
Total	37	63	100		
Educational qualification					
<12 Class	20	19	39	5.59	**Significant**
≥12 Class	17	44	61		
Total	37	63	100		
Working experience					
<7 Years	9	12	21	0.38	Not significant
≥7 Years	28	51	79		
Total	37	63	100		

**Values are significant whenPearson Chi-square test statistic: $\chi 2(1) = 3.84, p < 0.05$*

Statistically significant association was found between skill score ANMs and their working experience qualification indicating that skill of ANM was dependent on working experience (Table 11).

Table 11:Bivariate analysis(using Pearson's Chi square) showing the association of skill scores with demographic variables of ANMs. (n =100)

Demographic variables	Skill scores <Median	≥Median	Total	Values of χ^2	Significance*
Age					
<35	15	19	34	0.074	Not significant
≥35	30	36	66		
Total	45	55	100		
Educational qualification					

<12 Class	22	17	39	3.36	Not significant
≥12 Class	23	38	61		
Total	45	55	100		
Working experience					
<7 Years	15	6	21	9.08	**Significant**
≥7 Years	30	49	79		
Total	45	63	100		

**Values are significant when Pearson Chi-square test statistic: $\chi 2(1) = 3.84, p < 0.05$*

DISCUSSION

The present study revealed that considerable proportion 48(48%) of ANMs were from the age group of 32-38 years, 33 (33%) attained graduate level of education, and 65(65%) have working experience of 1-7 years. Majority of ANMs 66(66%) had good knowledge and 34(34%) had average knowledge on birth defects. In the present study significant association [$\chi 2$ (1) = 5.59 (P<0.05)] were found between educational qualification and knowledge.

I Bello (Ajediran, *et al.* 2013) conducted a study on knowledge of pregnant women about birth defects. The study reported that greater proportions of the participants (53.8%) were in the age range 21 to 30 years, and 52.8% attained secondary level of education. Majority of the participants 46.3% had high knowledge on the risk factors while 48.1% and 50.65 had moderate overall knowledge and specific knowledge about birth defects respectively. Most of the participants 48.1% believed that birth defect was of supernatural origin. The age, level of education, number of antenatal visits and parity of participants were not significantly correlated (p>0.05) with their specific and overall knowledge.

The present study revealed that 52(52%) of ANMs had good knowledge and 45(45%) of ANMs had average knowledge regarding developmental delays.

I O Ertem *et al* (2007); [5] conducted a study on mother's knowledge of young child development in a developing country. Mother believed that most developmental skills and activities should occur at alter than normative ages and most mothers did not know that sight (52%), vocalization (79%), social smiling (59%) and overall brain development (68%) begins in the early months of life. In a linear regression model with caregiver knowledge of child development inventory (CKCDI) score as the development and age of child, number of children, parental age and education as the independent variables, higher maternal education and lower number of children were found to be independent predictors of higher (CKCDI) scores (p< 0.001).

The present study revealed that ANMs of present study possessed highest skill regarding cleft lip and cleft palate (mean % of 62.50) and club foot (mean % of 61.00) and lowest regarding developmental delays (mean % of 48.31) and congenital cataract (mean % of 41.28). Skill of ANM varied most in the domain of defects at birth (SD 2.10) and the least in the domain of club foot (SD 0.49).

Hriday Raj Devkota *et al* (2017); [4] conducted a study on health care provider attitude towards disability and experience of women with disabilities. The study revealed that mean ATDP score among health care providers (78.52, SD=14.75), was low compared to the normative score of 100 or higher. Nurses/ ANMs obtained the highest mean score (85.59, SD=13.45), followed by general clinical health workers mean score (82.64, SD= 15.10). The lowest score was obtained by Female Community Health Volunteers (FCHV) score (73.73, SD=13.40) (p<0.001). The mean score difference between those who received disability training and who did not, was found statistically insignificant (p> 0.05). This may reflect that small number of individuals who have had training on disability. The majority of qualitative interview participants perceived providers to have the negative attitude with poor knowledge, skills and preparation for providing care to persons with disabilities.

CONCLUSION

Based on the findings of the present study it becomes clear that irrespective of the age, educational qualification, working experience education and regular practice persists. It emphasizes the needs for special education and training of ANMs specifically designed for birth defects, developmental delays and disabilities to identify these problems and provide accurate management earlier. The nurse educator should give emphasis on developing student's knowledge and skill to provide quality services to community people. Research on various innovative

methods for effective teaching of ANMs will be effective to provide quality health care services to community. There is an increase need for awareness programme for ANMs as they have to provide first level health services to community people.

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CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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