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Efficacy of structured health education programme on knowledge and attitude among affected tribal communities regarding prevention of anthrax at rural area of Koraput district, Odisha

Madhusmita Behera and Pruthivi Raj Behera

Abstract

Background: Anthrax is a zoonotic disease. It is transmitted between animals and humans and forms approximately 60% of all human infective organisms with a diversity of animal hosts including wildlife, pets and domestic animals. Anthrax diseases are the most striking example which transferred between animals and persons in a natural way. Anthrax control vaccine was first developed by Pasteur in 1881 and has been updated in 1939, throughout the early 1900s, its successful widespread disease control. In 2016 this outbreak was world wide. The most common type affects the skin and accounts for more than 95% of all cases. Other types are inhalation or pulmonary anthrax, and ingestion or intestinal anthrax. It is distributed globally and remains enzootic in many regions of the world, particularly sub-Saharan Africa, Asia and Central and South America. It is estimated that there are 2,000 to 20,000 human anthrax cases occurring annually worldwide. Hence, the true incidence of anthrax in man from three Southern Indian states, Andhra Pradesh, Karnataka and Tamil Nadu, during the last two decades, about 70 cases of human anthrax have been encountered at Christian Medical College, Vellore, of which 26 cases had cutaneous anthrax. During August 2009–October 2010, in Bangladesh 140 animal cases of anthrax and 273 human cases of cutaneous anthrax. 91% of persons in whom cutaneous anthrax developed had history of butchering sick animals, handling raw meat, contact with animal skin. In the year of 2007 in West Bengal the anthrax incidence rate is 111 including 10 in Orissa, 54 in Andhra Pradesh, 18 in Karnataka, 16 in West Bengal, 12 in Tamilnadu, 35 cases in Pondicherry. During 1990 to 2000. Orissa reported 42 cases with 2 fatal, in 2002 reported 11 cases, between them 3 fatal, 2004; 52 (6) in 2005; 19 (4) in 2006; 55 (11) in 2007; 68 (8) in 2008; 59 etc. Anthrax disease in the region is increasing, with 45 deaths of 439 cases recorded in the past nine years. An anthrax patient was first identified in Sarapalli in 1992, and since then, cases have been recorded in Narayanpatna, Laxmipur, Dasmantpur, Baipariguda, Lamtaput, Semeliguda, Potangi, and Nandapur at Koraput district.

Methods: A Pre-Experimental study with single group pre-test and post-test without control group design with quantitative (experimental) approach was undertaken on 100 affected tribal communities selected by convenient sampling technique in rural area, Koraput district, Odisha. Data was collected through self-structured questionnaire and data were analyzed by using descriptive and inferential statistics.

Results: The difference between pre-test and post-test knowledge and attitude score were highly significant ($P < 0.05$) level and there was a significant association between knowledge and the selected demographic variable that is 'occupation' (0.029) and 'awareness on previous health information' (0.024) at level of ($P < 0.05$).

Conclusions: The present study "Efficacy of structured health education programme on knowledge and attitude among affected tribal communities regarding prevention of anthrax at rural area of Koraput district, Odisha." the study shows that the knowledge and attitude among tribal communities about prevention of anthrax is very effective.

Keywords: Prevention of anthrax, tribal communities, knowledge and attitude

Introduction

Anthrax is a zoonotic disease. A zoonotic disease is an infection transmitted between animals and humans. It mainly affects the tribal people because they more consume infectious animal meat. Anthrax is a rare disease in the EU/EEA countries. Between 2010 and 2014, 58 confirmed cases were reported via the European Surveillance System (TESSy) by EU/EEA countries, ranging from one to 32 per year^[10].

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Scotland experienced the largest ever outbreak of injectional anthrax, with 119 cases identified^[11]. A few cases, most likely linked to the same contaminated batch of heroin, were also reported in Germany and the UK^[12]. In 2012 and 2013, new cases of injectional anthrax were diagnosed in Denmark, France, Germany and the United Kingdom. In July 2016, at least 40 people have been hospitalized amid an anthrax outbreak from nomadic communities in northern Siberia, Russia and more than 1,500 reindeer died from anthrax infections in Yamalo-Nenets Autonomous Okrug. A 12 year-old child also died due to the outbreak. Scientists believe the melting unearthed the frozen carcass of a reindeer that died in the previous anthrax outbreak in 1968.¹³ In September, 2001 letters containing anthrax spores were mailed to several news media offices, 5 people were died and 17 people were infected. 11 developed cutaneous anthrax, while 11 Sources, villagers dry beef for three months from April to June and store it in their houses for consumption. Due to consumption of the stale meat, people often fall prey to the disease, a team member said, adding that awareness is the need of the hour. Here may be three manifestations of anthrax in humans: Hence due to lack of knowledge and awareness about Zoonotic disease, people are suffering from anthrax, so there is need of structured teaching programme for prevention of Anthrax at the most prevalent state of Odisha^[22].

Objectives

1. To assess the knowledge & attitude of affected tribal communities regarding prevention of anthrax at rural area.
2. To find out the effectiveness of structured health education programme on knowledge & attitude among tribal communities regarding prevention of anthrax at rural area.

Methods

Study design

The research design selected for the present study was one group pretest-post-test pre-experimental research design.

Study population

Population refers to the entire aggregation of cases that meet a designated set of criteria." In the present study the population was concerned with affected tribal communities^[36].

Study area

The study was conducted in Villages:- Badpada, Chipakhur, Chilikunda, Mandekjharan, Block- Boipariguda, Koraput district, Odisha.

Sample size: For the present study sample size is 100.

Sampling method

"Convenience sampling is a non-probability sampling technique where subjects are selected just because of their convenient accessibility and proximity to the researcher."³⁷ In this study convenient sampling technique was used to select samples from population.

Inclusion criteria

The samples were selected with the following predetermined set of criteria during the period of study.

Inclusion Criteria

- Age group (15-65) years.
- Those who are able to understand Desia (local language) & Hindi.
- Those who were affected by anthrax within 5 years.
- Those who were suffering from anthrax.

Data collection tool

The study tool considered of three section:

Section I: Demographic variables consist of baseline information of Age, Sex, marital status, Religion, Educational status occupation, Duration of suffering with anthrax, Family history, received any information.

Section II: Compraises of questionnaire for assessing the knowledge component of affected tribal communities regarding prevention of Anthrax. It consist of 3 point scale.

Section III: Consist of Likert Scale (5 point table) to assess the attitude.

Development of tool

A structured questionnaire was developed to assess the knowledge and a observational checklist was developed to assess the practice of health personnel regarding Biomedical waste management.

After extensive review of research and non-research literature related to biomedical waste management, consultation with experts in nursing, medical and peer group discussion, the research tool was developed. The tool was prepared based on the objectives of the study.

Data collection

A formal written permission was obtained from the Chief Medical Officer (CDMO), Koraput district. Data was collection from month of April 2018. The samples were selected based on the inclusion criteria. The purpose of the study was creating awareness among affected tribal communities. Through convenient sampling the investigator selected 100 samples. Written consent was taken from these samples. It was two days teaching session, as per sample size it was divided in to five groups and each group contain 20 members.

On first day the tool was used for taking pre-test knowledge and attitude regarding prevention on anthrax. On same day the intervention was provided to affected tribal communities. After one week of teaching session again tool was used for collecting the post-test knowledge and attitude regarding prevention on anthrax.

Statistical analysis

The analysis will be analyzed in terms of objective of the study by using descriptive and inferential statistics which include:

- Organizing data in master sheet.
- Frequency and percentage distribution of affected community people to describe demographic characteristics.
- 't' test were used to find out the association between level of pre-test knowledge score of affected tribal communities with their demographic variables.
- Frequency and percentage distribution, mean, standard deviation and P value were used to analyze the

effectiveness of structured health education programme knowledge and attitude regarding prevention of anthrax.

Ethical clearance and informed consent

For the present study, the investigator took into consideration the ethical issues. The study was accepted by the research committee and ethical committee of KIMS, KIIT deemed to be University, Bhubaneswar. Informed consent of the community tribal people of the study subjects will be taken at the time of data collection. Prior permission was obtained from the Chief District Medical Officer (CDMO) of Koraput district to conduct final study. Explanation was given regarding the purpose of the study. Confidentiality of the information taken from the subjects will be maintained. The subject had the freedom to withdraw from the study at any time without giving any reason.

Results

Section-I: Frequency and percentage distribution Describe among affected tribal communities according to their demographic variables

It depicts the Frequency and percentage distribution Describe among affected tribal communities according to their age group. Most of the tribal community's represents (23%) were between 36-45 years and 56-65 years of age, 19% were of 15-25 years of age and 18% were of 26-35 years of age and only 17% affected tribal communities 46-55 years of age. It shows with regard to sex, majority 56% of affected tribal communities were male and 44% belong to female category. It indicates that frequency & percentage distribution according to marital status. Majority of affected tribal communities were married 66%. There were 17% unmarried, 14% were widow and 3% of study samples were divorce. Indicates that frequency & percentage distribution according to religion, the majority of the affected tribal communities were Hindu 65%. The percentage of tribal caste was 34%. The percentage of Christians was markedly less that is 1%. There were none of them were Muslim. Indicates that frequency & percentage distribution according to educational status. Majority of affected tribal communities 61% belong to Illiterate followed by the primary education comprising 28%. 7% were secondary education and the least being 4% were graduation. Depicts the Frequency and percentage distribution according to their occupation. Most of the tribal community's represents 59% were farmer. The percentage of daily labourer was 34%. The percentage of private employee was markedly less that was 7%. There were none of them government employee. Depicts the Frequency and percentage distribution according to their duration of suffering with anthrax. Most of the tribal communities represents 36% were >21 days to their duration of suffering with anthrax. 22% were of 17-21 days, 19% were of 7-11 days, 17% affected tribal communities 12-16 days and only 6% were of 3-7 days.

Indicates that frequency & percentage distribution according to Family history of anthrax disease. Majority of affected tribal communities 63% were saying yes, only 37% were saying no.

Indicates that frequency & percentage distribution according to awareness previous information about anthrax. Majority of affected tribal communities 65% were saying no, only 35% were saying yes.

Section-II: Frequency and percentage distribution of level of knowledge on pre-test & post-test knowledge score of affected tribal communities regarding prevention of anthrax. During pre-test reveals that majority of respondents (79%) had poor knowledge and (21%) of the respondents had average knowledge and none of them of respondents had good knowledge. During post-test the level of knowledge regarding prevention on anthrax. Among them (1%) affected tribal people had poor knowledge, more than half (39%) of them had average knowledge and (60%) affected tribal people had good knowledge regarding prevention of anthrax.

Section-III: Frequency and percentage distribution of level of attitude on pre-test & post-test attitude score of affected tribal communities regarding prevention of anthrax.

Shows the frequency and percentage distribution of affected tribal communities during pre-test reveals that majority of respondents 61% had negative attitude. 33% of the respondents had positive attitude. 6% of respondents had highly negative and none of them of respondents had highly positive. During post-test the level of attitude regarding prevention on anthrax. 62% affected tribal people had highly positive regarding prevention of anthrax. More than half 38% of them had positive attitude and none of them had negative and highly negative.

Section-IV: Area wise distribution of mean, SD, mean% of pre-test & post-test knowledge score regarding prevention of anthrax.

Indicates area wise distribution of mean, mean percentage (%) and standard deviation (SD) on pre-test and post-test Knowledge score of affected tribal communities.

- It reveals that during pretest in area wise distribution of definition, the mean (0.44 ± 0.51) standard deviation which is 22 as mean% and the mean (1.41 ± 0.68) standard deviation which is 70.50 mean% belongs to definition in the post test.
- The next area of mode of transmission the mean 0.61 ± 0.60 standard deviation which is 20.3 as mean% and the mean 2.11 ± 0.68 standard deviation which is 70.33 mean% belongs to mode of transmission in the post test.
- The area of Incubation period, the mean 0.27 ± 0.44 standard deviation which is 27 as mean% and the mean 0.78 ± 0.41 standard deviation which is 78 mean% belongs to Incubation period in the post test.
- The area of Incidence & prevalence the mean (0.67 ± 0.62) standard deviation which is 22.33 as mean% and the mean (2.20 ± 0.7) standard deviation which is 73.33 mean% belongs to Incidence & prevalence of anthrax in the post test.
- The area of causes and sign symptoms the mean (0.84 ± 0.70) standard deviation which is 21 as mean% and the mean (2.68 ± 0.92) standard deviation which is 67 mean% belongs to causes and sign symptoms in the post test.
- The area of diagnostic evaluation the mean (0.34 ± 0.47) standard deviation which is 34 as mean% and the mean (0.73 ± 0.44) standard deviation which is 78 mean% belongs to diagnostic evaluation in the post test.
- The area of prevention of anthrax the mean (1.10 ± 0.90) standard deviation which is 18.33 as mean% and the mean (3.95 ± 1.33) standard deviation which is 65.83

mean% belongs to prevention of anthrax in the post test.

Section-V: Association between pre-test knowledge score and selected demographic variables of affected tribal communities regarding prevention of anthrax.

Significant association between pre-test knowledge score with selected demographic variables that is 'occupation' (0.029) and 'awareness on previous health information' (0.024) at the level of ($P < 0.05$).

Section-VI: Effectiveness of structured health education programme on knowledge among affected tribal communities regarding prevention of anthrax.

Reveals the mean, standard deviation and paired 't' test value of knowledge score regarding prevention of anthrax. The obtained post-test value higher than the pre-test value. The paired 't' test value is (< 0.001) was highly significant. Therefore null hypothesis H_0 was rejected and research hypothesis H_1 was accepted. The mean value of post-test was significantly higher than the mean value of pre-test.

It is inferred that affected tribal communities had significantly gained in post-test knowledge of prevention of anthrax after structured health education programme. The structured health education programme was effective.

Section-VII: Effectiveness of structured health education programme on attitude among affected tribal communities regarding prevention of anthrax.

Reveals the mean, standard deviation and paired 't' test value of attitude score regarding prevention of anthrax. The obtained post-test value higher than the pre-test value. The paired 't' test value is (< 0.001) was highly significant. Therefore null hypothesis H_0 was rejected and research hypothesis H_1 was accepted. The mean value of post-test was significantly higher than the mean value of pre-test.

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It is inferred that affected tribal communities had significantly gained in post-test attitude of prevention of anthrax after structured health education programme. The structured health education programme was effective.

Discussion

1. Findings related to demographic variables of affected tribal communities

- **According to age:** Majority of the affected tribal communities 23% were between 36-45 years and 56-65 years of age, 19% affected tribal communities were of 15-25 years of age and 18% affected tribal communities were of 26-35 years of age and only 17% affected tribal communities 46-55 years of age.
- **According to gender:** Majority of male 56% than female 44% in affected tribal communities.
- **According to marital status:** 66% were married, 17% were unmarried and widows.

- **According to religion:** Most of the affected tribal people were belong to Hindu 65%, 35% were tribal caste and only 1% were Christian.
- **According to educational status:** Out of the study population of affected tribal communities 61% were illiterate, 28% were primary education, 7% were secondary education and 4% were graduated.
- **According to occupation:** Majority of farmer were 59%, 34% were daily laborer and only 7% were private employee.
- **According to duration of suffering with anthrax:** Out of the Duration of suffering with anthrax the majority of the affected tribal communities 36% were >21 days and only 6% affected tribal communities in 3-7 days.
- **According to Family history of anthrax disease:** 65% had family history of anthrax disease.
- **According to awareness on previous health information:** Majority of not received previous health information were 65% and only 35% had received previous health information about prevention of anthrax.

2. Finding related to the level of knowledge on pretest and post-test knowledge score among affected tribal communities regarding prevention of anthrax

- In the pre-test, knowledge of affected tribal communities was found the majority of respondents 79% had poor knowledge and rest 21% had average knowledge and none of them had good knowledge.
- During post-test the level of knowledge regarding prevention on anthrax. had increase that is 60% of affected tribal people had good knowledge, 1% affected tribal people had poor knowledge, more than half 39% of them had average knowledge and 60% affected tribal people had good knowledge regarding prevention of anthrax.

3. Finding on area wise distribution of pre-test and post-test knowledge score among affected tribal communities regarding prevention of anthrax

- The finding of the pre-test showed that during assessment on area wise distribution highest mean score (0.34 ± 0.47) which mean% was 34 obtained from the area of 'diagnostic evaluation'. The lowest mean score (1.1 ± 0.90) which is 18.33 was obtained from the area of prevention of anthrax.
- The finding of the post test showed that during assessment on area wise distribution highest mean score (0.73 ± 0.44) which mean% was 78 obtained from the area of diagnostic evaluation. The lowest mean score (3.9 ± 1.33) which is 65.83 was obtained from the area of 'prevention of anthrax'.

4. Finding on Efficacy of structured health education programme on knowledge and attitude among affected tribal communities regarding prevention of anthrax

There was a significant difference between post-test knowledge score and pre-test knowledge score and post-test attitude score and pre-test attitude score, majority affected tribal communities $t = (P \leq 0.001)$ structured programme on knowledge among affected tribal communities regarding prevention of anthrax was found to be effective.

Table I: Score revealing level of knowledge

Level of knowledge	Score
Poor	0-33%
Average	34-66%
Good	67-100%

Table II: Score revealing level of attitude

Level of attitude	Score (%)
Highly negative	1-25%
Negative	26-50%
Positive	51-75%
Highly positive	76-100%

Table III: Frequency and percentage distribution of affected tribal communities according to Age. (N=100)

Age in years	Frequency (f)	Percentage (%)
15-25	19	19
26-35	18	18
36-45	23	23
46-55	17	17
56-65	23	23

Table IV: Frequency and percentage distribution of subjects according to Sex. (N=100)

Sex	Frequency (f)	Percentage (%)
Male	56	56
Female	44	44

Table V: Frequency and percentage distribution of subjects according to marital status. (N=100)

Marital status	Frequency (f)	Percentage (%)
Married	66	66
Unmarried	17	17
Divorce	3	3
Widow	14	14

Table XI: Frequency and percentage distribution of subjects according to awareness on previous health information about prevention on anthrax. (N=100)

Have you ever received any previous health information about prevention on anthrax	Frequency (f)	Percentage (%)
Yes	35	35
No	65	65

Table XII: Frequency and percentage distribution of level of knowledge on pre-test and post-test knowledge score among affected tribal communities regarding prevention of anthrax. (N=100)

Level of knowledge	Score (%)	Pre-test knowledge		Post-test knowledge	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Poor	0-33	79	79	1	1
Average	34-66	21	21	39	39
Good	67-100	0	0	60	60

Table XIII: Frequency and percentage distribution of level of attitude on pre-test and post-test attitude score among affected tribal communities regarding prevention of anthrax. (N=100)

Level of attitude	Score	Pre-test attitude		Post-test attitude	
		Frequency	Percentage (%)	Frequency	Percentage (%)
Highly negative	1-25%	6	6	0	0
Negative	26-50%	61	61	0	0
Positive	51-75%	33	33	38	38
Highly positive	76-100%	0	0	62	62

Table VI: Frequency and percentage distribution of subjects according to Religion (N=100)

Religion	Frequency (f)	Percentage (%)
Hindu	65	65
Muslim	0	0
Christian	1	1
Tribal caste	34	34

Table VII: Frequency and percentage distribution of subjects according to Educational status (N=100).

Educational status	Frequency (f)	Percentage (%)
Illiterate	61	61
Primary education	28	28
Secondary education	7	7
Graduation	4	4

Table VIII: Frequency and percentage distribution of subjects according to occupation (N=100).

Occupation	Frequency (f)	Percentage (%)
Farmer	59	59
Daily labour	34	34
Private employee	7	7
Govt. Employee	0	0

Table IX: Frequency and percentage distribution of subjects according to duration of suffering with anthrax. (N=100)

Duration of suffering with anthrax	Frequency (f)	Percentage (%)
3-7 days	6	6
7-11 days	19	19
12-16 days	17	17
17-21days	22	22
>21 day	36	36

Table X: Frequency and percentage distribution of subjects according to Family history of anthrax disease. (N=100)

Family history of anthrax disease	Frequency (f)	Percentage (%)
Yes	63	63
No	37	37

Table XIV: Area wise distribution of mean, mean percentage and standard deviation on pre-test and post-test Knowledge score (N=100)

Sl. No.	Area	Pre-test			Post-test			Difference in mean%
		Mean (m)	Mean percentage (%)	Standard deviation (sd)	Mean (m)	Mean percentage (%)	Standard deviation (sd)	
1	Definition	0.44	22	± 0.51	1.41	70.50	± 0.68	48.5
2	Modes of transmission	0.61	20.3	± 0.60	2.11	70.33	± 0.68	50.03
3	Incubation period	0.27	27.00	± 0.44	0.78	78.00	± 0.41	51
4	Incidence & prevalence	0.67	22.33	± 0.62	2.20	73.33	± 0.71	51
5	Causes and signs symptoms	0.84	21.00	± 0.70	2.68	67.00	± 0.92	46
6	Diagnostic evaluation	0.34	34.00	± 0.47	0.73	78.00	± 0.44	44
7	Prevention	1.10	18.33	± 0.90	3.95	65.83	± 1.33	47.5

Table XV: Significant association between pre-test knowledge score with selected demographic variables, N=100

Sl. No	Demographic Variables	Mean ± S.D	P-Value	Inference
1	Age	41.93 ± 14.87	0.2445	Not significant
2	Gender			
	Male	4.32 ± 2.83	0.8304	Not significant
	Female	4.20 ± 2.52		
3	Marital Status			
	Married	4.39 ± 2.72	0.1147	Not significant
	Unmarried	4.94 ± 2.19		
	Divorce and widows	3.11 ± 2.78		
4	Religion			
	Hindu	4.61 ± 2.64	0.0800	Not significant
	Tribal caste with Christian	3.62 ± 2.67		
5	Educational Status			
	Illiterate	4.14 ± 2.78	0.8261	Not significant
	Primary and secondary education	4.39 ± 2.65		
	Graduation	4.63 ± 2.37		
6	Occupation			
	Farmer	3.66 ± 2.64	0.0209	Significant
	Daily labor	5.05 ± 2.38		
	Private employee	5.57 ± 3.30		
7	Duration of suffering anthrax			
	3-7 days	4.16 ± 1.83	0.4528	Not significant
	7-11 days	4.57 ± 2.67		
	12-16 days	4.88 ± 3.29		
	17-21 days	4.63 ± 2.71		
	>21 days	3.61 ± 2.47		
8	Family History			
	Yes	4.17 ± 2.94	0.6623	Not significant
	no	4.42 ± 2.23		
9	Awareness on previous health Information			
	Yes	5.11 ± 3.09	0.0204	Significant
	No	3.81 ± 2.34		

H1: There will be significant difference of knowledge & attitude regarding prevention of anthrax among tribal communities before & after intervention.

Table XVI: Comparison of mean score among pre-test knowledge and post-test knowledge pre-test attitude and post-test attitude N=100

Sl. No	Groups	Mean	Standard Deviation	P-value (P≤0.05)
1	Pre test	4.27	2.69	< 0.001
2	Post test	13.9	3.24	

Table XV: Comparison of mean score among pre-test attitude and post-test attitude pre-test attitude and post-test attitude N=100

Sl. No	Groups	Mean	Standard Deviation	P-value (P≤0.05)
1	Pre test	43.7	11.68	< 0.001
2	Post test	78.32	9.9	

Conclusion

The study were efficacy of structured health education programme on knowledge & attitude among affected tribal communities regarding prevention of anthrax at rural area of Koraput district. All tribal communities are knowledge us and positive attitude towards the prevention of anthrax.

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Declarations

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Conflict of interest: None

Ethical approval: The study was carried out after obtaining approval from the institutional Ethical Committee of KIIT Deemed to be University, Bhubaneswar, Odisha. Prior permission was obtained from the Chief District Medical Officer (CDMO) of Koraput district to conduct final study.

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