Effectiveness of an oral health education video to dispel myths and misconceptions associated with natal teeth in a rural Nigerian community

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Running title: Video to dispel myth in rural community

ABSTRACT

Objective: Innovative ways are imperative to dispel myths and misconceptions about natal teeth in rural communities and improve maternal and child health. The study aimed to test the effectiveness of *Adunni* a culturally appropriate video developed to dispel myths and misconceptions associated with natal teeth in a rural community.

Methods: This quasi-experimental study was conducted among mothers attending the immunization clinic of a rural Nigerian community. The participants were given a questionnaire to assess knowledge regarding prenatal teeth. They were then shown a video of *Adunni*, a 28-minute culturally appropriate video developed in the Yoruba language. Three weeks later, the same questionnaire was readministered to them. Their responses were evaluated pre- and post-intervention. Data obtained was analyzed using SPSS.

Results: A total of 44 participants were recruited with a mean age of 28.6 ± 8.2 years. Pre-intervention, 22 participants (50.0%) believed natal teeth were evil, while 16 (36.4%) thought it was due to individual variation. Post-intervention, only 3 participants (6.8%) considered it evil, and 41 (93.2%) viewed it as individual variation. This change was statistically significant ($p<0.001$). Overall, pre-intervention knowledge score ranged from 0 – 7 (mean score = 2.4 ± 2.0, 95% CI = 1.8 – 3.0) while post-intervention score ranged from 1 – 7 (mean score = 5.3 ± 1.8, 95% CI = 4.7 – 5.8). Paired T-test showed a statistically significant difference between pre-and post-intervention scores (mean difference = 2.9 ± 2.4, 95% CI = 2.1 – 3.6, $t = 7.683$, $p < 0.001$).

Conclusion: We found that *Adunni*, significantly improved the knowledge of causes and understanding of appropriate practices of participants in a rural community towards infants with natal teeth.

Keywords: child, culture, health education, natal teeth, oral health, video show

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Received 28/7/2020,
Accepted 27/3/2023
https://dx.doi.org/10.4314/ajoh.v11i2.1

INTRODUCTION

Myths and misconceptions concerning natal teeth are still in existence in many countries globally. These beliefs are more rampant in rural communities of countries like Nigeria, where as much as 53.7% of residents felt that the condition was indicative of an evil child[1]. Furthermore, children born with natal teeth and their families have been stigmatized and are believed to be cursed[1]. Affected families are emotionally disturbed, and parents, sometimes, have resorted to the abandonment of child [2] and in extreme cases, infanticide was advised[3]. Some health care providers too have held similar beliefs as found among some nurses3 and traditional birth attendants[4].

These myths and misconceptions persist in some African countries despite previous oral health education campaigns[2]. Thus, the exploration of other educational methods such as the use of videos became inevitable. Video has been shown to be an intriguing means of communication and a valuable tool in health education with high level of effectiveness[5,6]. Thus, a video show, *Adunni*, was developed to dispel myths and misconceptions on natal teeth[7]. The effectiveness of this video show in addition to oral health talk by the dentist has been documented[8]. However, the practicability of this combination of modalities is doubtful in disadvantaged resource settings of rural communities, because of the sparse number of dentists in the country that are available for oral health education to such communities. Rural communities are more isolated from the social and mass media and misconceptions about health as well as harmful cultural practices may linger. It is thus, imperative to explore if sole use of a video show can improve awareness and dispel myths on natal teeth. Importantly, watching home videos is a popular past time in Nigeria, and this made the authors to consider it appropriate to leverage on this habit to investigate the effectiveness of sole use of the video in rural settings. Investigating the effectiveness of video show in the absence of a dentist can provide evidence of video show as an educative tool, which can be utilized in different avenues in rural communities. We, therefore, hypothesized that watching of this video will change myths and misconceptions about natal teeth in the community. The aim of this study was to assess the effectiveness of *Adunni* a culturally appropriate video in dispelling myths and misconceptions associated with natal teeth in a rural community.

METHODS

Study site and participants

A quasi-experimental study was conducted over a period of three months in Igboora, a rural community in Southwestern Nigeria. Igboora is situated in the Ibarapa Central Local Government Area of Oyo State. Study participants were nursing mothers and female guardians attending the immunization clinic of the General Hospital, Igboora. The inclusion criteria were: age of 18 years and above, ability to speak and understand the local Yoruba language and willingness to participate in the study. A minimum sample size of 42 was determined using Stata statistical software version 14.

The intervention video

Adunni, a 28-minute video was shown to the participants. The video was developed in the Yoruba language casting local actors who appear in home videos, dressed in a similar way to catch their attention and

shot in locations with similar background to the target population. The development and details of the video has been previously documented[7].

Study instrument

The questionnaire comprised of questions on biodata of the participants such as the age, tribe, educational qualification and their occupation. It also included questions that assessed beliefs about natal teeth, the implication of natal teeth and its effect on the family, how to prevent its occurrence and the fate of such children in the society. The questionnaire asked the participants about the advice that would, hypothetically, be given to mothers of children that they see with natal teeth.

A score of one was allotted to each correct response to the questions regarding knowledge of natal teeth and zero was given for wrong answers. A minimum score of 0 and a maximum score of 7 was obtainable. The questionnaire was pretested among 10 women in the community who did not participate in the study.

Data collection

The purpose of the study was explained to the nursing mothers and female guardians at the clinic and written informed consent obtained from women who indicated interest in participating. A 16-item semi-structured questionnaire in Yoruba language that had been utilized in a previous study[8] was the study instrument. It was administered to 44 participants by two trained research assistants in a private and quiet area of the clinic to ensure confidentiality. The participants sat in the waiting area of the clinic after the pre-intervention questionnaires were administered and watched the video in batches of 11 from a large screen television. Three weeks after the video was shown, the same 16-item questionnaire was administered to the participants at the same location.

Ethical approval to undertake the study was obtained from Oyo State Ethical Review Committee (AD/13/479/981) and permission was granted by the head of the immunization clinic of the General Hospital, Igboora, Ibarapa Central LGA, Oyo State.

Data management

Data were entered into SPSS version 23. The knowledge scores were summed up to obtain total pre- and post-intervention scores. Proportions and means ± standard deviations of the pre- and post-intervention scores were calculated. Paired student t-test was used to compare means of the pre- and post-intervention scores at $p < 0.05$. The effect size was estimated using Cohen d formula calculated as mean difference in the pre- and post-data divided by the standard deviation of the mean difference[10,11].

RESULTS

Forty-four participants took part in the study. Their ages ranged from 18 to 65 years and the mean age was 28.6 ± 8.2 years. The majority 41 (93.2%) were from the Yoruba tribe, 21 (47.7%) had secondary school education and 35 (79.5%) participants were unskilled workers (Table 1).

Table 1: Socio-demographic characteristics of study participants

Variable	Frequency	%
Age (years)		
< 27	25	56.8
≥ 27	19	43.2
Education		
No formal education	4	9.1
Primary	8	18.2
Secondary	21	47.7
Post-Secondary	4	9.1
University	7	15.9
Tribe		
Yoruba	41	93.2
Others	3	6.8
Occupational Class		
Skilled	6	13.6
Unskilled	35	79.5
Dependent	3	6.8

The correct age for infants erupting their first teeth was taken as six to eight months and 9 (20.5%) and 6 (13.6%) of the study participants answered that babies erupt their teeth between three months and five months of age during pre-intervention and post-intervention interviews respectively. Twenty-four (54.6%) participants pre-test and 28 (63.6%) post-test stated that babies erupt their first teeth at six to eight months. There was an improvement in knowledge of time of eruption of teeth among the participants post-intervention (Table 2).

Table 2: Pre- and post-intervention knowledge of participants regarding natalteeth (n = 44)

Variable	Pre-intervention n (%)	Post-intervention n (%)
Age baby erupts first tooth		
3-5months	9 (20.5)	6 (13.6)
6-8 months	24 (54.6)	28 (63.6)
9-11 months	6 (13.6)	5 (11.4)
1 year and above	2 (4.5)	1 (2.3)
Don't know	3 (6.8)	4 (9.1)
Reaction if you see/help deliver baby born with natal teeth		
I will be scared	29 (65.9)	15 (34.1)
I will suspect child is evil	10 (22.7)	1 (2.3)
I will reassure mother it is normal	5 (11.4)	27 (61.4)
Don't know	0 (0.0)	1 (2.3)
Reasons for natal teeth		
They are evil children	22 (50.0)	3 (6.8)
Mother's deeds (contravened taboos)	2 (4.5)	0 (0.0)
Mother walking about at night	1 (2.3)	0 (0.0)
Just an individual variation	16 (36.4)	41 (93.2)
Don't know	3 (6.8)	0 (0.0)
Effect of natal teeth on the family		
It is a curse	6 (13.6)	1 (2.3)
It is an embarrassment	17 (38.6)	5 (11.4)
It a source of fear	10 (22.7)	6 (13.6)
It is an abomination	2 (4.5)	1 (2.3)
It is of no significance	7 (15.9)	31 (70.5)
Don't know	2 (4.5)	0 (0.0)
Advice for mother of a child with natal teeth		
Hide the child	3 (6.8)	4 (9.1)
Get tooth extracted	13 (29.5)	11 (25.0)
Sacrifices to appease gods and extract tooth	2 (4.5)	1 (2.3)
Get rid of the child	6 (13.6)	1 (2.3)
Extract tooth, then get rid of child	1 (2.3)	2 (4.5)
Leave child and tooth alone	14 (31.8)	24 (54.5)
Don't know	5 (11.4)	1 (2.3)
Advice for pregnant women to prevent natal teeth in a child		
Take herbal preparations/concoctions	6 (13.6)	5 (11.4)
Avoid contravening taboos	7 (15.9)	2 (4.5)
Avoid contravening customary beliefs about pregnant women	13 (29.5)	9 (20.5)

It is an individual variation, do nothing.	11 (25.0)	25 (56.8)
Others/combination of advice	6 (13.5)	2 (4.6)
Don't know	1 (2.3)	1 (2.3)
Effect of natal teeth on child's future		
Child's life can be affected negatively	23 (52.3)	7(15.9)
No effect on the child's future	17 (38.6)	36 (81.8)
No idea	4 (9.1)	1 (2.3)
How the child will be affected negatively	**n = 23**	**n = 7**
Child may do strange things	6 (13.6)	0 (0.0)
Child will be dull in school	2 (4.6)	1 (2.3)
Child can place irrevocable curse on people	10 (22.7)	3 (6.8)
Child will do things different from the norm	2 (4.6)	1 (2.3)
Combination of the above effects	3 (6.9)	2 (4.6)

The majority 29 (65.9%) of the study participants during the pre-intervention interview would be scared if they see or help deliver a baby born with natal teeth (Table 2). However, the proportion of participants reduced to 15 (34.1%) after they were shown the video. The majority 27 (61.4%) reported that they would reassure mothers of the normal nature of natal teeth post-intervention. When asked about reasons why some children are born with natal teeth prior to the intervention, 22 (50.0%) participants answered that *they are evil children* but after the intervention, 41 (93.2%) reported that it was *just an individual variation*.

Concerning pre-intervention responses regarding what effects natal teeth had on the child's family, only 7 (15.9%) were of the opinion that natal teeth had no effect on the family. On the other hand, 35 (79.6%) participants stated that the *family was cursed, it would be an abomination*, and that the child would be a source of embarrassment and fear. After watching the videotape, 31 (70.5%) stated that natal teeth would not have an untoward effect on the child's family (Table 2).

When asked about the advice participants would give mothers of affected children, 14 (31.8%) participants pre-intervention would want the child and tooth to be left alone. Twenty-five (56.8%) participants were of contrary opinions as they would tell the parents *to hide the child, get rid of the child and extract the tooth*, and, preferably with traditional sacrifices to appease the gods. Post-intervention responses showed that 24 (54.5%) participants would advise mothers to leave child and tooth alone.

On the perceived steps pregnant women should take to forestall such occurrences, pre-intervention responses showed that 11 (25.0%) participants thought that it *was an individual natural variation and nothing could be done about it* and 32 (72.7.%) participants reported that the pregnant women should take herbal concoctions, *avoid contravening taboos*, and *avoid contravening customary beliefs such as not walking about at noon* (Table 2). Post-intervention responses showed that 25 (56.8%) participants believed that natal teeth *are individual variations and nothing should be done* while 18 (40.9%) reported that pregnant women had to take herbal concoctions, *avoid contravening taboos, avoid contravening customary beliefs such as not walking about at noon and avoiding late nights* (Table 2).

Post intervention responses showed that 36

(81.8%) participants were of the opinion that child's life in the future would not be affected negatively by the presence of natal teeth compared with 17 (38.6%) who were of this belief in their pre-intervention responses (Table 2).

The knowledge score pre-intervention ranged from 0 to 7 and the mean score was 2.4 ± 2.0 (95%CI = 1.8 – 3.0), while the post-intervention score ranged from 1 to 7 with a mean score of 5.3 ± 1.8 (95%CI = 4.7 – 5.8). There was a significant difference between the pre-and post-intervention scores ($p < 0.001$, Cohen d = 1.2) (Table 3).

Table 3: Comparison of knowledge score of causes of natal teeth pre- and post-intervention

Knowledge score	Mean scores (SD)	Mean difference (SD)	95% CI	t test	p value
Post intervention	5.3 (± 1.8)	2.9 (± 2.4)	2.1 – 3.6	7.683	< 0.001
Pre-intervention	2.4 (± 2.0)				

DISCUSSION

The study revealed the effectiveness of *Adunni* a culturally appropriate health education video on improving rural Yoruba speaking participants knowledge about natal teeth. This result suggests that a culturally appropriate video to dispel misconceptions about natal teeth is an effective means of improving the knowledge and understanding of appropriate practices of these participants.

People have several learning styles by which information is processed. Consequent upon this, several instructive approaches are used in disseminating health education[12], which may be print, audio or visual. Audiovisuals have been stated to validate issues better than most other methods[13]. This may be consequent upon the fact that what is seen is usually better recollected than what is heard[14]. In addition, since pictures are thought to be better than words, the authors believed that the use of videos would be more intriguing and relaxing ways to catch the participants attention while they are being educated.

In our view, the home video business has flourished in current times in Nigeria and the public especially the lower social class appear to have a greater fondness for local films and so devote much time to watching them. This study has shown that leveraging on the home video watching habit by Nigerians in developing a culturally appropriate heath education video to dispel myths and misconceptions about natal teeth appears to be effective as there was a significant improvement in knowledge scores on natal teeth after intervention. This is in agreement with other studies on the effectiveness of health education videos[12,15]. This study also showed the need for oral health education among populations particularly in rural areas. The literature has shown that there is a strong connection between cultural beliefs and the activities of inhabitants of rural areas[16]. It may, thus, be inferred that superstitious beliefs are more entrenched among the rural populace.

This study revealed that differences in knowledge of tooth eruption and intending practices were seen in some areas. About 61% post-intervention compared to 11% before intervention would be calm when they see or help to deliver a child with natal teeth. Previous studies have revealed that community members would be surprised at seeing such children while many would suspect that the child was evil[3]. This will be depressing and distressing for a mother who has just had a baby with a natal tooth. Regarding the reason

why babies were born with teeth, 50% of the respondents at the initial interview believed they were evil children but this reduced to 6.8% post-intervention. Also, the majority (93.2%) of the participants post-intervention were of the belief that natal teeth were individual variations compared to 36.4% before the intervention. Beliefs previously reported about the etiology of natal teeth among the local communities included that the children are evil and their mothers, while pregnant, had contravened taboos and cultural norms for pregnant women such as not walking around at noon or late at night and disregarding abstinence from certain forbidden foods in their cultural and family settings[3,4].

It is good to note that regarding the effect on the family, 70.5% of participants before watching the video in contrast to 15.9% after watching the video were convinced that natal teeth had no negative effect on the family. Previous studies had revealed that some of the Nigerian populace believed that it was an abomination, a sign of a curse and an embarrassment to the affected child's family. This can cause adverse emotional and psychological effects on the family leaving them dejected[1,3].

The findings of this research also showed that post-intervention, 54.5% of the participants decided that they would advise mothers of affected children that such teeth and children should be left alone in comparison to 31.8% of the participants before intervention. Similarly, there was a reduction after intervention in the proportion of participants who erroneously believed that the presence of a natal tooth meant a melancholic and problematic future for the affected child. Hiding such children, abandonment, extraction of the tooth with or without sacrifices and infanticide have been documented as advices given to mothers of children with natal teeth[3]. Extraction of such teeth is frequently performed by quacks with rudimentary and unsterilized instruments, increasing the probability of such children getting infected with viral infections such as Human Immunodeficiency Virus and Hepatitis B or C, and bacterial infections.

Culturally acceptable videotapes present information with linguistic expressions, charisma and a setting that is familiar to the target audience and this may have been one of the reasons for the success of this video. Advantages of health education videos include the fact that they can be repeated, with consistent information[17,18] and are cost-effective. Furthermore, they can be shown in the rural areas and villages where there is no electricity powered by small generating sets, as was done during this study. Part of the time spent in watching local home videos can thus be spent watching these educative health videos as a form of edutainment assisting to dispel erroneous harmful cultural beliefs in a more relaxed way. This study has certain limitations that can present areas of development for further research. This was a quasi-experimental study, which lacked a control group for comparison. Also, the non-randomized design and short follow up are issues that should be addressed in future studies.

CONCLUSION

We found that *Adunni*, significantly improved the knowledge of causes and understanding of appropriate practices of participants in a rural community towards infants with natal teeth with a great effect size.

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