

2015-02-03

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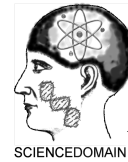
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Journal of Scientific Research & Reports

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DOI: 10.9734/JSRR/2015/14711

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## Maasai Community Perception of Oral Thrush: A Qualitative Study

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### Authors' contributions

*This work was carried out in collaboration between all authors. Authors HM, PP and JB contributed to the designing of the study. Author HM collected the data interpreted the results and prepared the manuscript. All other authors reviewed the manuscript before submission. All authors read and approved the final manuscript.*

### Article Information

DOI: 10.9734/JSRR/2015/14711

#### Editor(s):

(1) Amit Balakrishnan, School of Pharmacy, University of Maryland, USA.

#### Reviewers:

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(3) Anonymous, Brazil.

(4) Anonymous, India.

(5) Maen Mahfouz, Orthodontics & Pediatric Dentistry Department, Arab American University jenin, Palestine.

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Complete Peer review History: <http://www.sciencedomain.org/review-history.php?iid=754&id=22&aid=8023>

Short Research Article

Received 16<sup>th</sup> October 2014  
Accepted 20<sup>th</sup> January 2015  
Published 3<sup>rd</sup> February 2015

### ABSTRACT

**Aim:** To determine perception and understanding of oral thrush among Maasai women of reproductive age (WRA), Traditional Birth Attendants (TBAs), village leaders and health care workers in the Ngorongoro Conservation Area (NCA).

**Study Design:** Cross sectional, qualitative research.

**Place and Duration:** Three villages namely; Olbalbal, Misigiyo and Alelilai in the Ngorongoro Conservation Area, between March 2013 and September 2014.

**Methodology:** We included women of reproductive age (210), village leaders (5), Traditional Birth Attendants (TBA) (13) and health care providers (18). Data was collected using focus group discussions among Traditional Birth Attendants and village leaders, interview for women of reproductive age and health care providers.

**Results:** The community recognizes that oral thrush is a problem among pregnant and lactating

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Maasai women. According to the Traditional Birth Attendants and village leaders, it is believed that oral thrush came with the modern use of western medication as opposed to their traditional medications used earlier. They stated that their way of life has changed significantly causing these problems. Most WRA say oral thrush is a problem, but they do not know the cause. However, health care providers know that oral thrush is a problem with some knowing the causes and associated risk factors in the Maasai community.

**Conclusion:** There appears to be an information gap between community members and health care providers with respect to the causes of oral thrush in women of child-bearing age in Ngorongoro Conservation Area. It is noted that TBAs are important to rectify this deficit, because if they understand the problem they can influence changes. Results from this research work can inform more effective health promotion initiatives and interventions.

*Keywords: Maasai; women of reproductive age; perception; oral thrush.*

## ABBREVIATIONS

*FDG: Focus Group Discussion; TBA: Traditional Birth Attendant; COSTECH: Tanzania Commission for Science and Technology; WRA: Women of Reproductive Age; WHO: World Health Organization.*

## 1. INTRODUCTION

The prevalence of oral thrush among Maasai women of reproductive age in Ngorongoro Conservation areas was comparatively higher (32%) in the absence of immune-compromising conditions such as HIV/AIDS, cancer, and diabetes [1]. Oral thrush is an opportunistic infection caused by *Candida albicans*. The condition may hinder food intake due to the oral pharyngeal pain it causes. Oral disease is not only a problem in low and mid income countries but also a major public health concern in high income countries [2]. A previous study found that factors associated with oral thrush occurrence among Maasai women included pregnancy and lactating states [1]. Since oral thrush is an opportunistic infection, which may be predisposed by nutritional factors, we investigated the Maasai women serum levels of vitamins A, C and D in a previous study. The Maasai women were found to be deficient in both vitamin A and C, a few showed vitamin D deficiency besides that the estimated nutrient intake were below the recommended [3]. WHO proposed healthy diet and nutrition as one of the priority area of intervention against oral thrush [2]. However, for the WHO proposal to take root in a community, awareness of the importance of healthy diet and nutrition on body's defense against diseases is essential. In this study, we hypothesized that lack of awareness of predisposing factors for oral thrush among Maasai women of reproductive age may contribute to the high prevalence of the condition in this community.

This study therefore sought to identify beliefs and perceptions on oral thrush amongst the Maasai community members and health care providers in order to obtain information that will inform policy makers and form future research priorities.

## 2. MATERIALS AND METHODS

### 2.1 Study Area

The study was conducted in the Ngorongoro Conservation Area which is located west of Arusha Municipal in the Crater Highlands area of Tanzania. Ngorongoro District has a population of 174,278 of which males are 82,610 and females 91,668 with 46,750 of these being women of reproductive age [4]. The predominant ethnic group is Maasai living in rural areas as pastoralists with primary dependence on cattle for their livelihoods [5].

### 2.2 Study Design

This was a community based cross sectional study with women of reproductive age, village leaders, TBAs, and health care providers as the targeted population. This study component focused on awareness of oral thrush and its causes within the Maasai community. In the present study, Focus Group Discussions (FGD) were conducted with village leaders and TBAs in the three villages namely; Olbalbal, Misigiyo and Aleilali. For health care providers, self administered questionnaire was used to gauge their knowledge on oral thrush in the community.

A structured questionnaire was administered to participating women of reproductive age (WRAs).

## **2.3 Data Collection**

### **2.3.1 Focus group discussion**

Three focus group discussions, one in each community, were conducted among TBAs and village leaders to know what they understood about oral thrush. A total of 18 people participated in the FGDs each group having six people. A qualitative focus group discussion methodology was used as previously described [6]. The method is suitable for identifying, exploring, and explaining complex attitudes, perceptions, and beliefs [7]. TBAs and village leaders were mixed in each focus group discussion (FGD) which aimed at exploring their beliefs, perceptions and knowledge of oral thrush infection. A standardized guide that was in Maasai language was used and the discussion lasted an hour and a half. The guide consisted of questions about what is oral thrush, cultural practices with regard to foods during pregnancy and after delivery, and their perception on the causes of oral thrush. The discussions were done with the assistance of a moderator who spoke Maasai and a note taker who was a Maasai. In addition to taking notes, conversations were recorded using a digital recorder. The notes were later transcribed and translated to Swahili then further translated to English.

### **2.3.2 Interviews**

A structured questionnaire written in Maasai and later translated to English was pre tested before it was administered to Maasai women of reproductive age in three communities living around the Ngorongoro Conservation Area to gauge their awareness of oral thrush.

### **2.3.3 Intervention among health care providers**

An intervention was designed among health care providers in facilities around the Ngorongoro Conservation Area. A pre test was conducted among 18 health care providers working in four different health facilities to gauge initial knowledge on oral thrush. Thereafter, a one and a half hour presentation was made among health care providers in four health facilities in the Ngorongoro Conservation Area namely;

Ngorongoro Conservation Area Authority Dispensary, Endulen Hospital, Naenokanoka Dispensary, and Olbalbal Dispensary with a total of 18 health care workers (i.e., 4, 5, 5, and 4 respectively). After the presentation, a post-test was administered to measure the change from pre-existing knowledge on oral thrush. Eight weeks later, a knowledge retention test was conducted and the results are shown in Table 2.

## **2.4 Sampling**

Sample size for estimating proportion of awareness among Maasai women of reproductive age was calculated using the formula; Sample size (n) =  $Z^2P(1-p) / d^2$ ; p= anticipated proportion of population aware about oral thrush (15%) as previously described [8] (d = absolute precision (5); (Confidence interval) CI =95%; Z=1.96; Total sample size =196; Attrition =10%; Final Sample Size =215).

## **2.5 Data Management and Analysis**

All FGDs were transcribed precisely and translated (TBAs) from Maasai to Swahili and then further to English. Answers from the interviews were coded and statistical analyses were performed using IBM SPSS Statistics 20™. Descriptive statistics was used in analyzing the data obtained from the interviews.

## **3. RESULTS AND DISCUSSION**

Opinions of village leaders and traditional birth attendants on oral thrush and cultural Maasai practices on food and nutrition to mothers are presented. Focus group discussions were conducted with three distinct groups (Table 1).

During the discussions, information related to Maasai cultural practice and beliefs as related to oral thrush, food and nutrition during pregnancy and lactation was obtained.

### **3.1 Nutrition during Pregnancy**

Generally, there was a common agreement on food intake issues related to pregnancy and after delivery. All Traditional Birth Attendants (TBAs) said that they restrict intake of foods like meat, milk, beans, blood, and fat because of beliefs that these will cause the pregnant woman and the baby to gain weight excessively.

**Table 1. Composition of the focus group discussion by location**

Group	Village name	Number of village leaders	Number of TBAs	Age range
1	Olbalbal	1	5	50-70
2	Misigiyo	2	4	45-70
3	Alelilai	2	4	50-70

**Table 2. Demography and oral thrush perception among Maasai women**

% women (n= 210)	Description
68	Illiterate
92	Don't know what oral thrush is
96	Said oral thrush doesn't occur in men
87	Have had previous experience of oral thrush
63	oral thrush occurs after delivery
22	During pregnancy
15	Both during pregnancy and after delivery
29	Reported going to health facility due to oral thrush

*“We mainly restrict food intake among the primigravidae (women who are pregnant for the first time) but there is no restriction among the multigravidae since they already know the birthing process. We leave it up to them to decide whether they eat normally or they reduce. In primigravidae we restrict them to one meal per day and sometime we make them vomit using herbs and/or oil extracted from cow/sheep meat. This process restricts the amount of food absorbed for child’s development. We do all these to ensure the mother delivers safely because if the baby is big then the process of giving birth is made difficult”*

### 3.2 Nutrition Post Partum

Normally after delivery the woman is given special food treatment where an animal was slaughtered and the mother in law prepare some soup.

*“Immediately after delivery we give the mother milk mixed with blood followed by hot soup from a freshly slaughtered animal. After this treat, the woman is allowed to eat other foods. We give the newborn a mixture of butter made from sour milk to facilitate a bowel movement and the release of meconium/child’s first stool”*

### 3.3 Oral Thrush

With regard to oral thrush prevalence, the general agreement was the increase being related to the change of lifestyle especially on the use of western medication as opposed to traditional medications. As well as the change of diet in the maasai community.

*“This disease is caused by a western lifestyle that our people have adopted. Things like western medications, going to hospitals due to certain health conditions, and abandoning our ways of life like the use of traditional medications are the cause of oral thrush in this community. Years back there was no such a condition in our women. But now we see it often in women who are pregnant and those that have just given birth”*

*“Moreover, traditionally we use to eat a lot of freshly prepared meat as men. Women and children would drink a lot of milk which were traditionally prepared using some herbs, roots and leaves. Due to the change of weather we have lost most of our cattle to drought and therefore milk and meat have dwindled. We don’t have enough milk and meat and this may be causing the changes we are seeing in our community. We now depend on maize for food and this we do not cultivate ourselves; we either buy or get as food aid from the Ngorongoro Conservation Area Authority”*

### 3.4 Perceptions of Women of Reproductive Age on Oral Thrush

The following table shows the perceptions of participating Maasai WRA (Table 2)

### 3.5 Intervention among Health Care Providers

Results show that health care providers who were high in health professional ranks were more knowledgeable and their retention capacity was also higher compared to the ones in lower ranks (Table 3).

**Table 3. Scores of health care providers**

Level/ Rank	Number	Pre test score	Post test score	Retention score
Medical officer	2	80-90	78-92	92-96
Clinical officer	6	18-66	58-82	81-96
Assistant nursing officer	2	57-66	63-70	-
Registered nurse	4	62-84	78-92	88-94
Nurse attendant	3	24-38	57-58	57-65
Student nurse	1	20	61	76

Our study brought to light both interesting and worrisome information. Not only is knowledge on oral thrush and its causes insufficient, but a number of health assumptions were revealed. Some of these assumptions or beliefs have an effect on the women, thereby leading to oral thrush mitigating occurrences and/ or recurrences. For example, Maasai pregnant women are restricted from eating certain kinds of foods so that they bear children who are small/low in weight for easy delivery. This belief may cause poor maternal nutrition status, hence potentially exposing these women to infections like oral thrush. Yet another belief is that oral thrush came recently and may be due to the use of western medication. With this belief, women may not go or be denied the opportunity of going to the health facilities for treatment causing more pain and possible recurrence of the oral thrush due to improper cure.

Traditional birth attendants play a very important role among the Maasai women. They are influential in the ways of life including eating habits whenever a woman becomes pregnant. Traditional Birth Attendants have power in the community, and may alter the pathway of this disease as people will follow their directions. Due to their influence especially on the diet of pregnant women, educating Traditional Birth Attendants (TBAs) may significantly improve their nutrition knowledge; hence improving and advancing their care to pregnant and lactating Maasai women. Moreover, through their role as birth attendants, they could work hand in hand with health care providers to support early diagnosis and proper treatment of oral thrush. A similar study was done among Maasai on TB diagnosis, demonstrating that improving knowledge of traditional healers helped address the problem [9].

The study participants, especially women of reproductive age, village leaders and TBAs showed a low awareness of the risk factors to oral thrush. Only health care providers had some understanding of what oral thrush is and its

associated risk factors. A study among Turkish physicians reported that more comprehensive education on primary immuno-deficiencies is necessary for physicians [6]. Usually lack of awareness may cause misdiagnosis and potential under/mistreatment of the condition. Awareness was related to educational and occupational levels. Of the Maasai women, 68% had not gone to school at all as well as the Traditional Birth Attendants (TBAs). Health care workers exhibited a range of educational levels from nurse attendants to medical officers with the more educated being better informed about the causes of oral thrush as compared to the less educated (Table 3). The WHO Global Oral Health program has worked hard over the years to increase the awareness of oral health worldwide as an important component of general health and quality of life [2]. One of the WHO priority areas for the improvement of oral health worldwide is healthy diet and nutrition. A study on awareness of oral diseases in relation to HIV/AIDS in Dar es Salaam recommended that health authorities in Tanzania should establish population oriented health education for improving knowledge of oral diseases [10]. In the Maasai community, general knowledge on oral health is missing yet critically needed.

Knowledge retention was seen as associated with education level of the health care providers, with those in higher ranks demonstrating higher levels of retention than those in the lower ranks. It is therefore very important to provide in service training directed at the lower educated health provider cadre especially as they are predominantly located in the rural areas and are the primary caregivers in these settings.

#### 4. CONCLUSION

In conclusion, it is clear that the Traditional Birth Attendants (TBAs) and village leaders lack basic health care information related to oral thrush. It is essential that influential people in the society get proper information because they are in a better position to influence its implementation and the

community is receptive to the information they give. If Traditional Birth Attendants (TBAs), for example, are well informed of the importance of good nutrition before conception, during pregnancy and after delivery they will readily pass this information forward to their clients. It is also important that a follow up is made among health care providers in the Ngorongoro Conservation Area on how they treat and handle oral thrush patients.

### ETHICAL APPROVAL

Ethical approval was sought and obtained from the National Institute for Medical Research (NIMR) Tanzania, Certificate number NIMR/HQ/R.8a/Vol. IX/1474. Permission to conduct the study was also sought from Tanzania Wildlife Research Institute (TAWIRI) and also received from respective village/ ward governments. All study participants provided a written informed consent.

### ACKNOWLEDGEMENT

This study was supported by the Tanzania Commission for Science and Technology and the Canadian Department of Foreign Affairs, Trade and Development (DFTAD) through the Mama Kwanza Socio-Economic Health Initiative.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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