The role of local taboos in the management of marine fisheries resources in Tanzania

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ARTICLE INFO

ABSTRACT

Contemporary government rules for fisheries resources management in developing countries have been challenged for their inadequacy. The search for modern management models for coastal and marine resources could be usefully informed by wealth of traditional knowledge that enabled communities to sustainably live with their environment for centuries or millennia. Local taboos, defined as implicit or explicit social rules prohibiting certain actions, have played an important part in many traditional approaches to resource use. A mixed methods approach was used to investigate how local taboos play a role in the management of fisheries resources in some rural and urban coastal communities of Tanzania. Focus group discussions, key informant interviews, participant observations and questionnaire surveys were used to gather primary data. Data were analyzed both qualitatively and quantitatively. The study identified a number of potential local taboos in the management of fisheries resources and their habitats in coastal Tanzania. While these taboos showed some potential for applications in modern management approaches, a majority of fishers indicated non-compliance to most of them, especially in urban areas. A number of reasons are revealed to have attributed to the non-compliance of these taboos. These findings suggest the prospect for judicious integration of traditional practices with modern strategies, to enhance compliance. More studies on traditional knowledge that has a role in fisheries resources management are recommended, as are biophysical assessments in conjunction with traditional practices to reveal their scientific benefits. Successful community-based fisheries resources management in Tanzania will draw on modern and traditional perspectives.

1. Introduction

Tanzania is endowed with a high diversity of marine fish species, including more than 1000 species of fin fish and 8000 species of invertebrates [1]. It has luxuriant coastal and marine ecosystems including coral reefs, mangrove forests and seagrass beds [1]. For most coastal communities, fishing is the primary livelihood activity as most of the land in the coastal areas is of low agricultural potential [2]. However, these abundant fisheries resources and their supporting marine ecosystems face natural and human induced problems which pose a serious threat to the current and future generations, especially to coastal communities.

In many developing countries, the rules designed to manage marine resources, including fisheries resources, are weakly enforced due to lack of capacity [3]. Johannes [4] reveals that the state agencies responsible for monitoring and enforcement in developing countries are often distant, understaffed and under-funded. This has resulted in a growing interest in the application of other management approaches to conserve marine resources, including the use of traditional knowledge (TK).

Various authors suggested that conservation strategies that consider traditional knowledge have a higher rate of local acceptance, and consequently, are more effective [5–7]. This increased recognition of the role of traditional knowledge in the management of natural resources has followed the growing realization that such knowledge has allowed many people to live in harmony with their surroundings throughout history [8]. The conservation ethic of traditional knowledge has its origin in the work of Johannes [9] who assumed traditional management practices such as marine tenure and taboos to have evolved as a social response to marine resource scarcity. This view is however challenged by Foale et al. [10] who suggest that traditional management practices such as customary marine tenure and fishing taboos are primarily designed to manage relationships between social groups, rather than to sustain food security from fisheries. Despite this criticism, it is clear that many traditional approaches have contributed to the sustainable management of natural resources, and that such approaches can constitute the foundation of successful community-based fishery management [10].

TK is defined as the knowledge that local communities accumulate

over generations of living in a particular environment [11]. This definition encompasses all forms of knowledge including technologies, know-how, practices and beliefs that enable the community to achieve stable livelihoods in their environment [12]. Local taboo is an example of the traditional conservation practices, which is defined as the prohibition of an action based on the belief that such behaviour is either too sacred and consecrated or too dangerous and accursed for ordinary individuals to undertake [13]. Examples of local taboos include, religious imperatives that prohibit working on certain days may compel a termination of fishing effort on those days, with a consequent reduction of fishing mortality. Moreover, some cultures have developed long standing deterrents to using certain species of marine life as human food, or have prohibited consumption at certain times for the cultural reasons. But, whatever the reasons for their beliefs, these taboos may have important impacts on fisheries resources and habitats and therefore relevance for fisheries management. TK may have inadvertent conservation benefits which are not immediately apparent, even when the community members that are adhering to them say they are doing so for other reasons [12]. The quality and quantity of traditional knowledge varies among community members, depending on gender, age, social status, intellectual capability and professional occupation [14]. In addition, language, religion, socio-cultural aspects are known to be important driving forces in shaping TK.

Many coastal communities in Tanzania are known to hold traditional knowledge that enhances utilization and management of coastal and marine resources, but this knowledge has been little analyzed in terms of its influence in effecting contemporary resource management. The present study analyses and documents the role of local taboos in the management of marine fisheries resources in Tanzania. Rural and urban communities in Tanzania vary greatly in terms of socio economic status, culture and biological diversity, but differences in knowledge of and compliance with local taboos between rural and urban coastal communities have not been studied. Hence the present work also compared compliance to local taboos in rural and urban coastal communities. The results may inform the design of community-based fisheries management strategies, taking into account different social settings.

2. Materials and methods

2.1. Study area

This study was conducted in six coastal communities of Tanzania. Four rural and two urban coastal communities were purposively selected for the study to capture the variation in cultured knowledge. The rural communities chosen were Gando and Kojani (on Pemba Island), Bweni and Kirongwe (on Mafia Island), while the urban ones were Ununio and Mjimwema streets, at the periphery of Dar es Salaam City (Fig. 1). Other criteria considered for site selection were: being long-established, accessibility, and residents' interaction with coastal and marine resources for their livelihood.

Dar es Salaam is one of the fastest growing cities in Sub-Saharan Africa and the largest city in Tanzania with an estimated population of 4.4 million [15]. Due to urbanization people of different ethnic groups immigrate to the City in large numbers. This is believed to have caused cultural changes in the indigenous population of Dar es Salaam [16]. Mafia and Pemba Islands has changed relatively little from pre-colonial times and thus has retained much of its traditional culture.

2.2. Data collection methods

A mixed method approach was used to collect data in all six coastal communities. A mixed methods approach is a class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language in a single study [17]. In this study, qualitative techniques were Focus Group Discussions (FGDs), Key Informant Interviews (KII) and Participant Observation, while a Questionnaire Survey used with fishers provided quantitative data. This approach was important for a deep exploration of fishers' knowledge on local taboos related to management of fisheries resources, both quantitatively and qualitatively.

Three focus group discussions in each site were conducted with active and retired fishers. The first group comprised of active young fishers (having fishing experience of less than 20 years); the second group contained active elder fishers (with over 20 years of fishing experience); and the third group consisted of retired fishers (having more than 45 years fishing experience) and who had lived in that particular site for most of their life. Each focus group contained four to six participants composed of men and women who used different traditional fishing practices. Discussion questions were centered on community social relations and local taboos related to coastal and marine resources including fish species subject to taboos and the reasons for any restrictions. All discussions were recorded using a digital recorder to make sure that all information given was recorded.

For the questionnaire survey, respondents were selected based on the criteria of being resident in the study area and being in the traditional fishing activities for at least 20 years. The study assumed that 20 years of experience in fishing was adequate for one to be a local expert. Three stage sampling was applied to select respondents. First, resident fishermen who conducted traditional fishing were recognized. Second, resident traditional fishermen who had been involved in fishing for more than 20 years were identified. Third, 30 resident traditional fishermen who had more than 20 years of fishing experience were randomly selected from each study village to participate in the face to face questionnaire survey. This gave a total of 180 respondents from all six study villages; a sample of 30 respondents from each site is usually sufficient for statistical analysis irrespective of the population size [18]. Main questions focused on: socio-demographic attributes of respondents; identification of taboos and belief systems attached to coastal and marine resources; the level of compliance with the identified traditional taboos and norms; possible solutions relevant for the promotion and revitalization of traditional knowledge in the management of coastal and marine resources.

Key informant interviews were conducted with village leaders and village elders. Informants were selected using snowball sampling whereby community members suggested appropriate respondents [19]. Between two to three key informants were interviewed per village. Again, questions reflected the general overview of social and cultural relations, resource use patterns and local taboos related to coastal and marine resources practiced in their areas.

Participant observation techniques were also applied to enrich the information collected through group discussions, interviews and questionnaire survey. In this technique, various fishing areas were visited and informal conservations were held with fishermen on traditional knowledge and taboos pertaining to the fishing activity. The researcher attended fishing related activities carried out in the intertidal area at least twice per study community, to observe the lived experience and hear the perspectives of the study population on local taboos in fishing related activities. Locations visited included gleaning areas, fishing vessel and gear making areas and intertidal sacred areas. Data were collected in the form of field notes and photographs.

2.3. Data analysis

The collected data were analyzed both qualitatively and quantitatively. Qualitative information was analyzed using content analysis whereby field notes from interviews, discussions and observations were categorized into a variety of levels or themes; then inferences were made about the messages within the texts [20]. Quantitative information was numerically coded and analyzed using Statistical Package for Social Sciences (SPSS) version 11.01 to generate descriptive statistics (percentages). Socio-demographic variables of respondents and fisher's perceptions on compliance with local taboos were analyzed into