



Breastfeeding and fisheries management: Exploring infant nutrition as a socioeconomic driver in artisanal fisheries of the Philippines

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ABSTRACT

Destructive fishing practices and overfishing are common throughout the Philippine archipelago. This, coupled with a rapidly increasing human population, puts the marine resources at risk as more and more people become reliant upon the fisheries for sustenance. This paper unpicks infant nutritional choices as a potential socioeconomic driver in fishing effort. Research from a larger study focusing on the viability of tourism as a supplemental livelihood for remote artisanal fishing communities in the Philippines unexpectedly exposed five cases of fishing families going into debt to purchase breast milk substitutes for their children. Building upon previous research that has demonstrated the influence of economic need on fishing effort, infant nutritional choices, specifically the unnecessary use of milk substitutes is discussed as a potentially overlooked driver in fishing effort. This paper discusses potential impacts of infant nutritional choices in the context of economic need, population growth and fisheries management.

1. Introduction

Limited livelihood opportunities lead to critical dependencies. For coastal communities in the developing world this situation translates to increased or shifting pressures on the fisheries (Kronen et al., 2010; Kleiber et al., 2014; Turner et al., 2007) on declining fisheries (Hilborn et al., 2003; Stobutzki et al., 2006; UNFAO, 2010; Watson et al., 2002). This situation has been documented in the Philippines where fisherfolk are described as among the poorest segments of the population (Green et al., 2003). The rapidly increasing population of the Philippines has led to over-exploitation of the fisheries (Castro and D'Agnes, 2008). Filipino fishing households have a poverty incidence twice that of the national rate (Castro and D'Agnes, 2008). A recent report showed that most small-scale fishermen in the Philippines fall below the national poverty threshold, making it difficult to meet the necessary nutritional food requirements (Ramiscal et al., 2015).

Lack of access to diversified economies may lead to resource over-exploitation (Kronen et al., 2010). Porter's (2014) research showed economic need to be an influencing factor in fishing effort with some fishermen refusing work because they did not need to do it. Economic need may also influence how people fish (Kronen et al., 2010). Fabinyi (2007) noted that the first response to a declining catch is an increase in fishing effort combined with the use of more "efficient" fishing methods and gears (e.g., dynamite fishing, cyanide fishing). The reduced concept

of long-term consequences and the need for short-term sustenance makes over-exploitation of the resources economically beneficial to fishing families living in poverty (Turner et al., 2007).

Malnutrition and food strategies in fishing communities are well studied; however, Béné et al. (2016) note the "lack of focus on nutritionally vulnerable groups such as pregnant women and children" as a point of weakness in the literature (p. 181). Kleiber et al. (2014) noted the significant role of gender in understanding fisheries and marine ecosystems. Noting that fisheries literature often overlooks important determinants such as breastfeeding, Akintola and Fakoya (2017) emphasise its importance in child nutrition in small-scale fishing communities. Poverty causes poorer families to prioritise expenditures. These choices may translate to school drop-outs or changes in family nutrition (see Sobel et al., 2012). Products such as infant formula create a substantial cost for a family living in poverty. Given the economic restrictions of many fishing households, and the negligible cost of breastfeeding, it becomes important to explore the use of breast milk substitutes (BMS) among fishing families in the Philippines, especially in the absence of a restrictive medical condition (e.g., active tuberculosis) or in instances when the mother must be away from the infant (e.g., work responsibilities) (see also Porter and Orams, 2014).

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1.1. Rationale

Resource management requires an understanding of the socio-economic drivers that influence behaviour and resource use (Kronen et al., 2010) including the role of gender (Kleiber et al., 2014). Given, the current state of the fisheries, identifying the dynamics of marine resource use and the socioeconomic factors driving these uses becomes important for ensuring food security and sustainable livelihoods (Turner et al., 2007). Past research has shown that economic need influences fishing effort (Baticados, 2004; Fabinyi, 2007; Porter, 2014). Thus, operating under the assumption that the use of BMS creates a significant additional need for income (Salud et al., 2009), it is likely that fishing households respond to this type of economic need through an increase in fishing effort. The purpose of this paper is to explore infant nutrition as a potential socioeconomic driver in the fisheries. This is done through an exploration of the literature and reported cases of debt associated with infant nutrition and care choices as they relate to fishing livelihoods and fishing effort in the Philippines.

2. Methods

This descriptive paper explores a subset of data from a larger study on the viability of marine tourism as a supplemental livelihood for Filipino fishing communities. Between October 2011 and April 2013, semi-structured interviews were conducted with 42 members of fishing households from three separate fishing communities in the Luzon region of the Philippines (see Fig. 1). In all three communities, purposive and snowball sampling were used to collect data from adult members



Fig. 1. Map of the Philippines. Research sites where semi-structured interviews took place are indicated with arrows. The capital city, Manila is indicated with a circle.

(16 years and over) of active fishing households. All participants were provided with a participant information sheet, informed that participation was voluntary and further, that they were able to opt out of any questions or withdraw from the interview at anytime. Verbal or written consent was obtained prior to beginning interviews. Due to potential ethical risks associated with the data set, participant confidentiality was prioritised. Participant names were replaced with numbers in transcription data. The interview questions focused on describing fishing livelihoods, personal environmental footprint of fishing and tourism awareness and willingness to engage in tourism as a supplemental livelihood. The survey instrument did not address infant nutrition. The data discussed in this paper resulted from two scenarios. The first, specific to Victory, was a combination of questions regarding basic living expenses and ability to make ends meet. It is also noted that the researcher was pregnant during these interviews and shared this openly with participants of Victory. The second scenario, specific to Decabobo, was interpreted as a result of having a then 4-month old baby in tow during the interview sessions. The researcher's son was present during the interviews and the presence of a foreign and comparatively "fat" baby inspired some participants to ask about his diet, which, at the time, was exclusively breast milk.

This study analyses a limited data subset involving debt and infant nutrition choices. Infant nutrition data first emerged from inductive approach set in a realist paradigm following the six phases of thematic analysis as outlined by Braun and Clarke (2006). The cases presented in this paper have been triangulated with case-specific primary data (e.g., expenses, feelings towards infant nutrition) as well as broader secondary data (e.g., costs of BMS, fisheries data).

3. Results

3.1. Infant care and nutrition

Breastfeeding seems a rational choice for low-income families given that it does not require any special equipment (e.g., bottles, potable water for mixing formula) and its ability to provide customised nutrition for at least six months (Pugh et al., 2002). Data from 42 members of fishing households, in three fishing communities (Victory, Dimipac, and Decabobo) in Luzon revealed that the majority of fisherfolk ($n = 37$) surveyed were able to make ends meet. There were, however, five exceptional cases (over 8%) of members with reported debt. Three respondents were from Barangay Victory in the Pangasinan province and two respondents were from Barangay Decabobo in the Palawan Province. The common thread between all five cases was the use of/need for BMS to feed young children. These households described the costs associated with infants and young children, primarily the use of BMS, as the causative factor of the debt. For example, one Victory mother cited their weekly income as "not enough because the baby needs milk, vitamins, and diapers". Another Victory mother said they "ask money from the parents because their child still needs milk". A Victory father, when asked about his weekly expenses, stated, "I have a new baby boy", this statement was interpreted as indicating a need for BMS and/or other baby items (e.g., diapers). In Decabobo, two mothers responded that milk was a weekly expense noting that they both only breastfed part time. When asked, the two mothers felt that supplementing with BMS was best for their children. The mothers described by these five cases were not regularly employed, however, did participate in "sideline" activities such as gleaning. It is worth noting that because the participants were not asked specific questions on infant feeding practices, no information was derived on the preparation of formula. Previous evidence suggests families dilute formula products to make them last longer and reduce costs (see Bayanihan para sa Mag-Iina, 2013).

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