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Qualitative Research

Perceptions about Varieties of Brown Rice: A Qualitative Study from Southern India

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ABSTRACT

Consumption of whole grains, such as brown rice, compared to white rice can decrease the risk of type 2 diabetes mellitus. This qualitative study conducted in 2009 sought to identify factors that can act as barriers to or promote acceptance of brown rice as a staple food among South Indian adults (n=65). Using purposeful sampling, eight focus groups were conducted among adults with normal body mass index and adults who were overweight, aged 24 to 47 years, living in slum and non-slum sites in Chennai, a city in Southern India. These focus groups, conducted in Tamil, the local language of Chennai, were homogenous by sex. The focus groups were audiotaped after obtaining consent. Results were transcribed and coded according to four major themes that emerged during the focus group discussions, including culture and dietary practices, factors influencing rice preferences, awareness and perceptions of brown rice, and barriers to and factors influencing acceptance of brown rice. Overall, the majority of participants favored eating rice and ricebased foods. Tradition largely dictated the specific form of rice that people consumed. Awareness about the nutritive properties of brown rice was poor and was cited as a major barrier to its acceptance. In addition, participants tended to consider cooked rice that was neither white nor long-grained to be inferior. However, they believed that

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Manuscript accepted: April 20, 2011. Copyright © 2011 by the American Dietetic Association. 0002-8223/\$36.00 doi: 10.1016/j.jada.2011.07.002 although convincing people to switch to brown rice would be a slow process, promoting its healthful benefits could serve to popularize it. *J Am Diet Assoc. 2011;111:1517-1522.*

n estimated 285 million people have diabetes worldwide, and an alarming increase to 438 million is expected by the year 2030 (1). Global estimates of health expenditure on diabetes will total at least US\$376 billion in 2010 and US\$490 billion in 2030, and most countries will spend 5% to 13% of their national health expenditure on diabetes (2). Currently, India has 50.8 million people affected with diabetes (1). The prevalence of diabetes among adults participating in the Chennai Urban Rural Epidemiology Study was 14%, representing a 72% increase in prevalence during 14 years of follow-up (3). The escalation in diabetes incidence is occurring as global free trade continues to fuel rapid economic and nutrition transitions in India, especially in urban settings. These transitions are accompanied by a shift in dietary consumption toward more highly refined carbohydrates, fats, and animal products (4). In Chennai, India, we found that nearly half of daily energy intake came from refined grains, and that white polished rice constituted >75% of refined grain intake, which is associated with a higher risk of metabolic syndrome (5). In addition, evidence shows that the rise in type 2 diabetes among the urban South Indian population is strongly associated with an increase in obesity (6). In addition, a recent study also from South India showed that refined grains (predominantly derived from white rice) were positively associated with risk of type 2 diabetes (7). This is supported by recent data from the Nurse's Health Study and the Health Professional's Follow-Up Study in the United States, which suggest that substitution of brown rice for white rice was associated with a substantially lower risk of type 2 diabetes (8).

Rice continues to be one of the major cereal staples in India, but the quality of rice grains during the last few decades has shifted from traditional hand-pounded rice (undermilled grain) to more polished white rice (refined grain), mainly because of the advent of double-roll sheller mills aimed at improving rice yield (9). Improvement in carbohydrate quality by replacement of white rice with whole-grain foods such as brown rice is likely to have a beneficial effect on biomarkers for diabetes and cardiovascular disease risk and, ultimately, on diabetes risk itself. However, no randomized controlled trial has been conducted to evaluate the impact of brown rice substitution at meals on lowering diabetes risk. Given the compelling evidence from observational studies of whole grains and type 2 diabetes (10), a randomized trial is a necessary next step to determine whether brown rice substitution at meals is effective in lowering diabetes risk.

Focus groups have been shown to be particularly useful for formative research (11) because they shed light on the influence of culture, socioeconomic status, and health on dietary preferences. They also aid in understanding people's perceptions of acceptability and potential barriers that could prohibit acceptance of a product. The purpose of this research was to conduct a qualitative study using focus groups to identify factors that can act as barriers to or promote acceptance of brown rice as a staple food among South Indian adults.

METHODS

Participants

Overweight adults (Asian-specific body mass index [calculated as kg/m²] cut point for overweight ≥ 23) (12) and adults with normal body mass index (≥ 18.5 to 22.9) living in slum and non-slum residences in Chennai, aged 18 years and older, and for whom rice was the preferred staple were recruited using purposive sampling. The 2001 Census of India (13) defines *slum* as a compact area of at least 300 people or approximately 60 to 70 households of poorly built congested tenements, in an unhygienic environment usually with inadequate infrastructure and lacking proper sanitation and drinking-water facilities. By including participants from slum and nonslum areas, we attempted to obtain perceptions from diverse socioeconomic groups. Our rationale for including participants by weight status was to understand potential differences in perceptions between people at higher risk for type 2 diabetes and the general (healthy) population.

The Madras Diabetes Research Foundation in Chennai, established contact with key people in the selected slum and non-slum areas to recruit participants for the Focus Group Discussions (FGDs). People living in and around the key contact's home in the non-slum area were approached for study participation by visiting their homes. The FGDs were conducted in the key contact's home. In the slum area, recruitment and FGDs were held in the government-run Integrated Child Development Center, a day-care service for local children aged 2 to 5 years.

Study Design and Analysis

The study was conducted using a cross-sectional qualitative design. Ethical clearance was obtained from the Institutional Review Board of the Harvard School of Public Health and the Ethics Committee of the Madras Diabetes Research Foundation. The FGDs were conducted in Tamil and audiotaped after obtaining written informed consent from each participant. They were scheduled at a time that was convenient for participants and care was taken to ensure privacy and confidentiality.

All participants who agreed to participate in the FGDs were required to taste two varieties of rice, namely Bapatla rice (both raw and parboiled forms) and the parboiled form of Uma red rice (which owes its name to the red

Rice	Description
Bapatla raw rice	This form of rice is obtained by dehusking the Bapatla variety paddy, which is then polished to obtain Bapatla raw rice.
Bapatla parboiled rice	Bapatla variety paddy is soaked in water, steamed, dried, dehusked, and polished to obtain Bapatla parboiled rice.
Parboiled red rice	A variety of rice with pigmented (red) bran popular in Kerala, a southern state.

Figure 1. Description of rice varieties commonly consumed in Tamil Nadu. These varieties, which are commonly available in Tamil Nadu, are all highly polished (8% to 10%). Brown rice (0% polish) is not freely available in the markets.

pigment of its bran). Figure 1 provides a description of these two rice varieties and its two forms (raw and parboiled). These rice varieties were polished to 0%, 2%, and 4% (varieties of brown rice include both unmilled [0% polish] and undermilled rice [2% and 4% polish]; unmilled rice would contain 100% bran content, and undermilled would have some of the bran content only). In India, there are >200,000 varieties of rice (14), but the most commonly consumed varieties in the South are Ponni, Sona Masuri, and Bapatla. These rice varieties are highly polished (8% to 10%) and are available in both raw and parboiled forms. Brown rice is currently not freely available in the market. The rice at 0%, 2%, and 4% polish (both raw and parboiled forms) and Uma red rice (in the parboiled form) were specifically milled for this study.

The FGD participants were given the opportunity to examine the uncooked rice varieties before tasting the cooked forms (Bapatla raw rice, Bapatla parboiled rice, and parboiled Uma red rice), each at three different degrees of polishing (0%, 2%, and 4%). The rice was served with sambhar (a gravy dish made with lentils, some vegetables, and Indian spices) in the presence of the research team during a period of 3 days, with each day being allocated for one form (ie, raw, Bapatla parboiled, and Uma red parboiled) to avoid confusion. Thus, on the first day, each participant was served three samples of Bapatla raw rice at three different degrees of polishing (0%, 2%, and 4%), on the second day they were served Bapatla parboiled rice at three different degrees of polishing, and on the third day they were served Uma red rice at three different degrees of polishing.

A focus group guide was developed to ensure consistency across groups. Probes for discussion were built into the guide to allow for a thorough understanding of the topic. The guide included such topics as perceptions of dietary preferences, influence of factors such as culture, economic status, and health in determining dietary habits, decision-making in the family regarding dietary intake and perceptions on introducing brown rice (or equivalent) as the main staple in the diet. Trained, sex-specific social scientists conducted each FGD and were assisted by a note-taker who recorded nonverbal behavior, made notes, and plotted sociograms that gave a visual representation of the dynamics of the group discussions. Presence of sex-specific moderators and note-takers ensured Download English Version:

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