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Abstract

The relationship between diet and kidney disease outcomes has been established, and as a result, hemodialysis patients are required to modify their diet. However, there is a gap in understanding how diet is influenced by social factors, particularly among Japanese patients whose diet is known to be high in salt. The purpose was to explore the dietary patterns of Japanese hemodialysis patients and better understand the challenges they face in adhering to dietary restrictions. A focused ethnography, employing observational methods with six Japanese hemodialysis patients was undertaken. Fieldwork included observations, informal interviews, and weekly formal interviews for 6 weeks. Five categories were identified during the process of data analysis. This study highlights the strong influence of culture, tradition, and family on the dietary patterns of Japanese hemodialysis patients, which has rarely been acknowledged by Japanese health professionals.

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Keywords

dialysis patients, dietary patterns, Japanese culture, ethnography, focused ethnography

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Introduction

Kidney disease is a chronic condition affecting growing numbers of people worldwide, with kidney failure requiring some form of kidney replacement therapy such as hemodialysis or transplantation (Mahon, Jenkins, & Burnapp, 2013). In 2014, the total number of hemodialysis patients in Japan reached 320,000 (roughly 0.25% of the total population) (Masakane, Hanafusa, Kita, & Maeda, 2017). Although holistic management of hemodialysis patients is essential, there is strong evidence to suggest that diet plays a crucial role in a patients survival (Brunori et al., 2007; Jiang et al., 2015), which may be problematic for Japanese patients given their food culture.

Japan's food culture is traditionally based on rice, legumes, fish, seaweed, vegetables, and other foods. Seasonings based on fermented soybeans such as soy sauce and miso are used, along with salt. Processing techniques are used to preserve fresh foods and extend their shelf-life, such as pickling and drying. For these reasons, Japanese foods tend to be high in salt. Although traditional cuisine is still prominent in some areas of Japan, many Japanese regions are undergoing a rapid nutrition transition, which has seen a change to a more Westernized, high salt, diet type (Htun, Suga, Imai, Shimizu,

& Takimoto, 2017). Yet, food choices and eating behaviors are both influenced by and reflective of cultural practices and social contexts (Freedman, 2016), which potentially impinge on patients' ability to adequately manage their diet during hemodialysis.

Although quantitative research methods have previously been used to measure hemodialysis patients' dietary patterns, the use of qualitative methods to gain an in-depth understanding of dietary practices is rare. Two recent quantitative studies provide some understanding of this issue. One Japanese cohort study investigated the impact of dietary patterns on hemodialysis patients' clinical outcomes (Tsuruya et al., 2015). Individuals who consumed an "unbalanced diet" (greater consumption of vegetables than meat and fish) had a higher adverse event rate compared with those with "well-balanced diets" (similar consumption of meat, fish,

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and vegetables) (Tsuruya et al., 2015). A cross-sectional study in the United States involving participants from varying backgrounds found that those living in poverty were significantly more likely than nonpoverty individuals to develop chronic kidney disease (Crews et al., 2015). Although the Japanese study does not provide an explanation for why some patients choose unbalanced diets, the U.S. study suggests dietary practices may be influenced by social factors. The cross-sectional nature of both studies limits an in-depth exploration of dietary patterns, and how cultural and social issues may influence these patterns. Despite traditional eating behaviors, Japanese dialysis patients are shown to have better prognoses than dialysis patients in the United States and the United Kingdom (Zhou et al., 2003).

Thus, the aim of this study was to explore the dietary patterns of Japanese hemodialysis patients to better understand the challenges they face in adhering to dietary restrictions in the context of their daily lives. Gaining an in-depth understanding of the dietary patterns of individuals undergoing hemodialysis may help to better inform future patient education and dietary support.

Method

Research Design

The constructivist paradigm (Guba & Lincoln, 1989) was the ontological and epistemological foundation for this study. That is, we acknowledge that multiple social constructs of reality exist, and that the interactions and relationships between researchers and participants can be used to construct meaning from the data.

For these reasons, a focused ethnography was used as it allowed the researchers to interact with the research participants in their social, cultural, and physical environments. Ethnography is a well-established qualitative methodology that interprets the world of meaning where people live, enabling researchers to understand participants' beliefs and practices (Swift & Tischler, 2010). An ethnographic approach was appropriate because food choices and eating patterns are influenced by culture including the social environment (Freedman, 2016). Focused ethnographies deal with discrete issues in specific contexts and have emerged to meet the needs of health care research, where traditional ethnographies are not always feasible (Cruz & Higginbottom, 2013). Focused ethnography acknowledges that researchers are sometimes in familiar environments and thus can undertake small-scale projects in their everyday settings (Savage, 2000). This methodology was also used because we specifically focused on Japanese hemodialysis patients' eating behaviors and not their behaviors in general. This focused ethnography, using observation and both informal and formal interviews, provides important insights into how Japanese people manage their dietary intake while on hemodialysis. It shows that their traditional eating habits and the

social aspects of meals will be at odds with their recommended diets, requiring them to develop numerous strategies to adhere to various restrictions.

Sample and Recruitment

This study recruited participants from a hemodialysis outpatient unit in one hospital that had been operational since 1975 and had 142 hemodialysis outpatients at the time of the study. At this dialysis department, patients were taught to limit their intake to 500 mL/day of liquids and 6 g/day of salt. The study site was chosen because the research team had a strong relationship with the staff, who were very supportive. This made undertaking the study at the site relatively easy. After ethics approval, hemodialysis patients were invited to participate in the study if their interdialytic weight gain was consistently higher than recommended (i.e., 6% or higher on a monthly average). This patient group was specifically targeted to better understand the dietary issues patients may struggle with, ultimately informing future strategies to support patients. In addition, there is existing evidence that demonstrates a positive nutrition effect associated with higher interdialytic weight gain (Ipema et al., 2016).

A total of 22 of the 142 patients were identified as having higher than recommended interdialytic weight gain. Thirteen of these patients were excluded because they were either not adults or had dementia, unable to provide informed consent. Physicians asked the remaining nine potential participants whether they would be willing to hear about the study. Next, a dialysis nurse approached and explained the study in more detail. If patients agreed to participate, the researchers (K.Y. and M.O.) formally explained the study and obtained their consent. The patients were formally informed by the researchers that according to the recommendation of the ethical committee, they would receive JPY5000 (US\$45) if they involved in this project. All explanations were given to the patients during their hemodialysis treatment. Three patients declined the offer to participate, stating they were either too busy or did not want to be observed in their homes. The remaining six who agreed were then approached by one researcher (either K.Y. or M.O.) and the study was explained to them.

Data Collection

Fieldwork was conducted in both the hospital and in participants' homes during the months of July to August 2009. All the data were collected during this period. The average daily salt intake for Japanese was 10.7 g/day in 2009 and 9.9 g/day in 2018 (Ministry of Health, Labour and Welfare, 2017); a negligible change since we have collected our data. Therefore, although the data are 10 years old, it remains useful in understanding the salt intake of dialysis patients in Japan.

Data collection was stopped after no new information was emerging from participants during the interviews and observations. Participants were observed and informally

interviewed undergoing hemodialysis at the hospital once a week for 6 weeks. Participants were also observed and formally interviewed once in their homes. Home visits were conducted on days when patients did not receive dialysis treatment. Observations and formal interviews were timed to correspond to meals, generally the evening meal. Informal interviews at the hospital focused on participants' general well-being and their eating behaviors, which were used to help clarify the observations and interview responses. Data collection was stopped after no new information was emerging from participants during the interviews and observations.

An unstructured, conversational approach was used in all interviews (Draper & Swift, 2011). Interviews focused on participants' eating behaviors and their thoughts about their diet and dietary restrictions. Informal interviews, where participants were probed about their actions and behaviors, were used to aid the researchers' understanding of observations. These lasted from 10 to 30 min. Examples of interview questions included the following: "Can you tell me about your eating habits?" and "What strategies do you use to help you with your dietary restrictions?" Unstructured observations in the home focused on meal preparation, cooking methods, and the kitchen and eating areas, allowing the researcher to capture participants' behaviors in their natural environment (Draper & Swift, 2011).

Narrative field notes and digital photographs were taken contemporaneously during the observations. After the observations, the field notes were read and additional notes made. If family members were present and gave the researcher verbal consent, the comments that they made were also recorded. Digital photographs were taken that exemplified various food types and practices, to help contextualize the field notes. Both formal and informal interviews were audio recorded and transcribed verbatim. Information was also collected from written medical records on individual characteristics, medical history, blood test results, and so on.

The research team reflected on their backgrounds, experiences, and role in the research process, termed reflexivity (Palaganas, Benguet, Sanchez, Molintas, & Caricativo, 2017). All observations, interviews data collection, and taking photographs were conducted by one member of the research team (K.Y.), a dietitian and a Masters student, who worked at the hospital. A senior member (M.O.) attended the first two formal interviews. Participants were known to K.Y. prior to data collection, which may have assisted in recruitment and data collection.

The remainder of the team included three PhD-prepared academic nurses with expertise in qualitative methodologies and dialysis, and two more junior researchers with experience in nursing, nutrition, and dietetics. All members were female, three had experience with dialysis patients and all but two were Japanese. Thus, the team included both

researchers familiar and unfamiliar with the Japanese culture and with dialysis patients in particular. Throughout data collection and analysis, the research team met to discuss the data, reflecting on how their backgrounds may have influenced their interpretation of the data.

Data Analysis

Inductive content analysis was used to analyze the data and was informed by Elo and Kyngas (2007) approach. First, in the preparation phase, both interviews and field notes were read and reread several times, enabling the researchers to become immersed in the data. Then, in the organizing phase, data were coded, whereby similar codes were combined and preliminary categories developed and labeled. Third, in the abstracting phase, using an iterative approach, the researchers reviewed field notes and interview transcripts and the emerging categories, identifying common events and scenes characteristic of the participants' experiences. This resulted in the final category names.

The analysis was led by the two researchers (K.Y. and M.O.), working with the data in Japanese. Throughout this process, one researcher (M.O.) translated informative parts of the data into English, which was then discussed in face-to-face meetings and e-mail correspondence with the Australian members of the research team. Other members of the team contributed to the analysis at various times through regular discussions, helping to refine the data categories, labels, and descriptions.

To ensure trustworthiness, one researcher (K.Y.) immersed herself in the field and conducted all observations and the series of interviews with participants to promote dependability of the data. Emerging categories were checked with participants, who agreed that the categories reflected their experiences. Throughout the analytic process, research team meetings were held to discuss the emerging findings. We tried to enhance transferability by recruiting all potential patients who were willing. Our findings may be applicable to other Japanese dialysis patients.

Ethical Considerations

This study was conducted after being reviewed and approved by the Clinical Research Ethical Review Committee at the participating Maebashi Saiseikai Hospital, approval no. 29. Written informed consent was obtained from all participants after they were ensured that their privacy would be protected and they could withdraw from the study at any time by giving either an oral or written indication that they wished to do so. If family members were present in the participants' homes during any stage of the data collection, they were asked to provide verbal consent for their contribution to be included in the study. Verbal consent was obtained from the participant to each subsequent data collection.



Figure 1. Mr. D's dinner table.

Results

The six participants (five males, one female) ranged in age from 31 to 71 years (average 57.2 years) and had been receiving hemodialysis for between 1 and 23 years (average 9.0 years). The participants' primary diagnoses included renal calculi ($n = 1$), diabetic nephropathy ($n = 2$), and chronic glomerulonephritis ($n = 3$). The average weight gain between hemodialysis sessions was 6.9% to 8.0%. All participants had family living with them. Three people were employed.

Data analysis generated five categories: (a) struggling with the desire to continue previous eating habits; (b) persisting with eating traditional foods high in salt; (c) using individualized approaches to adhere to dietary restrictions; (d) eating as a family experience; and (e) fearing blood test results. Each category is explained and is supported by verbatim quotes and field notes.

Struggling with the desire to continue previous eating habits was the label given to the first category. Participants described how their eating behaviors had developed over their life and went on to explain how they grappled with their inherent desire to continue their previous eating habits. As a result, they struggled with their dietary restrictions; feeling the desire to eat in their usual way, but knowing that they were not supposed to consume certain foods. It was apparent that participants understood the recommended dietary restrictions, but were continually having to restrain themselves. Some participants described having dreams of eating certain foods and amounts, but they were aware that this was not advisable. Others recalled delicious meals that they could no longer eat. They also highlighted that their eating experiences were much less enjoyable because of their dietary restrictions.

For example, Mr. B said, "*There are times when I crave to eat more. But I know I shouldn't so I restrain myself.*"

Another participant, Mr. D commented, "*My dream is to eat and drink as much as I like. I know it won't happen, though.*"

The second category was labeled persisting with eating traditional foods high in salt. Participants described how their eating patterns began during their childhood and continued to develop over time. They made the point that the "traditional" Japanese diet was high in salt and involved consuming foods that had been boiled in broths containing soya sauce, accompanied by salty side dishes. In fact, the participants were used to having salty condiments on the dining table for easy access during meals.

Mr. D's table exemplifies this (Figure 1). It appears that when their condition required them to modify their eating behaviors and specifically restrict salt intake, the adjustment was difficult to make and many participants persisted with eating salty traditional foods. Mr. E said "*It is a custom which I have performed for years.*" It appears that the intake of salty foods and condiments reflects Japanese food culture; changing this cultural practice was challenging.

In the third category, labeled using individualized approaches to adhere to dietary restrictions, participants described how they had developed their own personal strategies to help manage their eating patterns. All patients had a body weight scale and some of them had scales for measuring their food. Mr. B even brought the body weight scale with him when traveling. The body weight scale that Mr. B. showed the researcher was very small in size. The size of the body weight scale was about 200 mm \times 250 mm \times 20 mm, which allowed him to carry it with him while he traveled. Mr. C commented, "*I measure [body] weight with the scale twice, in the morning and evening.*" Another strategy used by participants with relation to volumes of fluids they consumed was to place liquids in designated containers that held known quantities. They also poured liquids into measuring cups or other cups that held known quantities before drinking.

Ms. F said,

Until I take medicine at the end of the day I make it a rule to live on this 600 (ml bottle) . . . I'm supposed to drink only 800 ml in a day, and well, I put just 600 (ml) in this water bottle.

Another strategy used by some participants was to place educational materials, such as those providing guidance on food and eating, in prominent spots around the house so that they were readily visible during cooking or eating. Mr. E said, *"We have a chart that lists potassium and phosphorus and everything . . . it's a good reference because you can tell at a glance which foods you need to be careful about"* (Field note: Educational materials were taped to the side of the cupboard and the refrigerator door).

Eating as a family experience was the fourth category. Participants explained how meals were a social experience to be shared with others. Eating meals was an important part of family life, making participants feel like part of the family rather than like a hemodialysis patient. Participants' descriptions suggested that their dietary patterns reflected and were embedded in social experiences. Because meals were a shared experience, some participants said the food they ate reflected their family's taste and not simply their own dietary restrictions. Ms. F said,

Today I'm making a dish of simmered food seasoned with soy sauce. This is for my husband and son . . . My daughter . . . comes by almost every day . . . and I give her some of the cooked dishes that I've made to take home.

Ms. F explained that she enjoyed cooking what her family liked to eat and serving them meals. Comments made by others suggested that family members were willing to accommodate the participant's dietary restrictions. For example, Mr. C identified that he rarely eats out and consequently his wife will cook him a wide variety of dishes, which she serves on beautiful plates.

The final category was labeled fearing blood test results. In discussing their dietary patterns, participants frequently brought up the subject of blood tests, as these tests were regularly used to assess their adherence to food and fluid restrictions. It was clear that these test results were a source of anxiety. Some participants described how "bad test results" resulted in them being chastised by their doctors. This distressed them because they were unsure of specific ways to improve test results. Mr. A said, *"I had a really rough time when my phosphorous levels were high. No matter how careful I was about drinking or eating fish or meat, my phosphorous was seven or eight and wouldn't drop. It was really agonizing."*

Discussion

The aim of this study was to explore the dietary patterns of Japanese hemodialysis patients to better understand the challenges they face in adhering to dietary restrictions in the

context of their daily lives. Participants identified that high salt diets are part of the Japanese culture, which was established early in their childhoods, and that having salty condiments easily accessible on the dining table is a common practice.

The desire for food is a primary desire according to Maslow's hierarchy of needs (Maslow, 1970), and meeting this need results in developing eating habits that are reinforced over time. Previous research has found that dialysis patients struggle to prioritize their diet and suffered from resulting accumulation of stress (Nagao & Oobayashi, 2003). This study, however, found a further struggle by patients to overcome the eating habits they had developed over time. This struggle was ongoing, even for patients who had been on hemodialysis for many years, which clearly suggests that health professionals cannot assume that hemodialysis patients can and will adjust to dietary restrictions over time. This finding implies that these patients may benefit from ongoing support, education, and advice, and not simply initial education about dietary requirements during hemodialysis.

This study identified that Japanese hemodialysis patients were challenged by the salt restrictions they faced because of the high salt content in many traditional foods. The INTERMAP study (International study of macro-micro nutrients and blood pressure) has shown that salt intake levels have been and still are higher in Japan than in Europe and the United States (Zhou et al., 2003). A consequence of salty food consumption is the desire to consume fluids, which occurs through an osmometric thirst sensation (Lindberg & Fernandes, 2010). However, high fluid intake can also be detrimental to hemodialysis patients. Therefore, one tactic to help adhere to fluid restrictions is reducing the amount of salt and salty foods consumed in the diet (National Institute of Diabetes and Digestive and Kidney Diseases [NIDDK], 2013). However, evidence from this study indicates that health care professionals need to understand that providing authoritarian instructions to cut back on salt and fluids may be unsuccessful because dietary consumption of salt and salty foods are deeply embedded in individuals' cultural and social upbringing. The categories (a) struggling with the desire to continue previous eating habits and (b) persisting with eating traditional foods high in salt, suggest that patients require alternative approaches other than using authority to help manage their dietary restrictions. Therefore, recommending alternative sources of flavor, such as the use of herbs and spices, may be a strategy worth proposing, but how this is done appears to be important. A recent study involving 20 kidney disease patients receiving care by dietitians demonstrated that the engagement style used by the dietitians was crucial to understanding patients' individual situations (Morris, Herrmann, Liles, & Roskell, 2018). Thus, taking a patient-centered approach may be more successful in helping patients reduce their salt and fluid intake, and find alternatives to salt.

Weighing foods was a common and logical tactic used by participants, suggesting that it should be explicit in patient education, especially when patients are exceeding the recommended interdialytic weight gain. Other strategies mentioned by participants that could also be included in this education are placing liquids in designated containers with known volumes, and placing educational materials in visible locations. Drinking from smaller glasses, freezing drinks to reduce the speed of consumption, and designating containers to control the amount of fluid consumed are recommended strategies to limit water consumption (NIDDK, 2013) and reflected some of the strategies this study's participants were using.

Previous research has indicated that nonadherence to dietary and fluid restrictions is a leading cause of treatment failure for patients with kidney failure, and can also lead to poorer outcomes (Khalil, Darawad, Al-Gamal, Hamdan-Mansour, & Abed, 2013). Walsh and Lehane (2011) identified that sustainable adherence is associated with patients perceiving greater health benefits and fewer barriers to complying with dietary restrictions. Furthermore, other research identifies that patients' adherence to dietary and fluid restrictions improves with the support from a family care (Cicolini, Palma, Simonetta, & Di Nicola, 2012). This previous research is consistent with the notion presented by our participants that dietary restrictions are difficult to adhere to, even considering the degree of familial support they receive.

The participants consistently highlighted that family was a source of support, and eating meals together developed family bonds. Thus, in this study, the category of "(d) eating as a family experience" has become one of the essential characteristics of the dietary patterns of dialysis patients. One possible reason why this category is identified is that all of the participants had lived with their family. Participants acknowledged that family support helped them to adhere to their dietary restrictions and that their families were willing to accommodate dietary restrictions. Research findings from the perspectives of cultural ethnography and sociology have pointed out the importance of the link between food and its social function (Foster & Anderson, 1978), and the constant connection between loving care and food in the home (Lupton, 1998). In this study, those ties seemed to be even stronger when participants faced the adoption of new dietary practices with the support of their families. Health professionals may use this understanding of the importance of family bonds and support during mealtime to involve the family in ongoing education. In a recent study, Morris, Love, van Aar, Liles, and Roskell (2017) identified that families find dietary recommendations regarding kidney failure complex, sometimes contradictory and left some families feeling overwhelmed. Thus, potential approaches to family education and support need to be carefully considered.

Blood test results partially reflect the person's dietary habits and physical condition. Although they can provide a useful reference, they were also associated with stress and anxiety for the participants. In addition, doctors' offhand

remarks and actions caused participants to worry. Individuals with kidney failure in a recent study identified dietitians' approach to advising patients about their blood test results can also be very unhelpful (Morris et al., 2018). There are also reports about dialysis patients anguishing over their diet therapy (Nagao & Oobayashi, 2003). This study, however, indicates that the patients not only experienced temporary anguish, but rather that their fear was an ongoing reaction to blood test results. Clearly, monitoring blood test results plays a role in quality kidney care. However, the way health care professionals share these results and approach the discussions that ensue must be sensitive to the patient's situation. Adopting a patient-centered approach may be more successful if professionals partner with patients and develop a management plan together.

When considering the findings as a whole, the theoretical framework developed by Visser, Hutter, and Haisma (2015) helps situate and understand the findings of this study. They propose that food choices are not simply decisions based on individual preferences. Instead, these choices signal both the "cultural schemas," and individuals' knowledge and values gained from past experiences, and their capabilities and functioning, which are situated within the family context. Capabilities reflect individuals' knowledge, competencies, psychosocial disposition, economic resources, and social power. Functioning captures what individual's value, which then influences how they behave. Our findings, which identify the desire to continue previous eating habits and persistence in eating traditional foods, are reflective of the cultural schemas our participants have developed. Participants' understanding of their dietary requirements and the strategies they developed to manage restrictions indicates their capabilities. Therefore, it is better to first understand the food culture of Japanese patients and to help them develop strategies to remove seasonings with high salt content from the table.

And, use of these strategies and eating as a family experience, and even how patients react to blood tests with fear, reflect their functioning. Using this formal framework (Visser et al., 2015) has implications for ongoing education and support for dialysis patients. For example, two previous systematic reviews of dialysis patient education showed that individualized counseling and structured education are beneficial (Karavetian, de Vries, Rizk, & Elzein, 2014; Mason, Khunti, Stone, Farooqi, & Carr, 2008); however, a Cochrane review provides evidence of the importance of tailoring interventions in general to the context (Baker et al., 2015). Adopting Visser et al.'s (2015) theoretical framework, by understanding patients' cultural schema, their capabilities, and functioning, provides a structure to tailor both counseling and structured education to patients' contexts.

Although this study has illuminated various issues about Japanese hemodialysis patients' dietary patterns, there are several limitations of this research. First, participants were recruited from one outpatient setting, which may not be

reflective of other outpatient departments. However, hemodialysis services in Japan are delivered according to national and international guidelines, thus our findings may be applicable to some other settings. Second, we recruited patients who had exceeded their recommended interdialytic weight gain. We thought this would help us to understand the challenges hemodialysis patients face adhering to dietary restrictions, but it is possible that if we had included other patients, we would have uncovered additional understandings. Third, only six patients were recruited to the study, which may limit the generalizability of the results. Although this sample size may appear small, we recruited all willing patients from the target population and undertook observations, informal and formal interviews both in the outpatient hemodialysis unit and at participants' homes over a 6-week period, resulting in a depth of data. It is always possible that we did not reach data saturation, but we analyzed all of the available participant data. However, we did note that similar topics were being discussed by many participants; therefore, we may have saturated the data. Furthermore, five of the six participants were male, so it is possible that had we had more females in our study, additional findings may have emerged. Finally, additional insights may have been gained if we purposively interviewed family members, given the importance our participants placed on family support and their social construction of mealtimes. To note, a recently published study did focus on this group (Morris et al., 2017), so a novel understanding of the family perspective is emerging.

In conclusion, our ethnographic findings provide in-depth insights into hemodialysis patients' struggles and efforts to adhere to dietary restrictions, information which may not be comprehensively captured through the use of questionnaires or interviews. The findings describe how participants are supported in their lives by their families and the role traditions and culture play in shaping dietary patterns, and demonstrate why treating dietary practices as centered on food is less useful than looking at cultural/social systems in which food plays a central role. Understanding the cultural and social contexts of hemodialysis patients' food preferences, may help tailor patient education and support in the future.

Transparency Declaration

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported. The reporting of this work is compliant with the COREQ checklist (Tong, Sainsbury, & Craig, 2007). The lead author affirms that no important aspects of the study have been omitted and that any discrepancies from the study as planned have been explained.

Declaration of Conflicting Interests

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Supplemental Material

Supplemental material for this article is available online.

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