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ORIGINAL ARTICLE

Using the Photovoice Approach to Empower Pakistani women participating in the PakCat program to become promoting agents of healthy eating habits in Catalonia

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ABSTRACT

Background: Immigrant women of Pakistani origin are among one of the most invisible ethnic groups residing in Catalonia. They are also among the most at-risk groups for obesity and type 2 diabetes.
Aim: To promote healthy eating habits among the Pakistani population in Barcelona.
Method: The study was a mixed-method randomized control trial (RTC) conducted in Badalona and Santa Coloma de Gramenet, two of Barcelona's most populous municipalities with 87% of Catalonia's foreign Pakistani population. The research involved 137 women, 70 from Casa Àsia and 67 from FundacióAteneuSant Roc, who were recruited through the support of organizations like The FundacióAteneu Santa Roc and Casa Àsia. The study was developed in five phases: dissemination and recruitment, pilot study, baseline data collection, implementation of the food education intervention, and evaluation. Participants were divided into small subgroups (12-15 women) and participated in 10 educative sessions based on the Transtheoretical model for 10 weeks. The final session was dedicated to the Photovoice methodology, which involved participants capturing an image of their favorite dish and responding to the SHOWeD questions. The images were then presented to a multilingual nutritionist who addressed any concerns during the photovoice process.
Results: The study analyzed 70 images of healthy dishes and identified improvements in dietary patterns. The Harvard Healthy Plate method was applied to prepare lunches and dinners, with vegetables in raw and cooked forms and often accompanied by yoghurt sauce. The carbohydrate portion consisted of whole grain chapati or rice, while the protein portion was mostly composed of lentils, eggs, and chicken. The participants prepared their meals with olive oil and water, and mostly consumed seasonal fruit for dessert. Red meat was minimally present in the dishes, with lentils, eggs, chicken, and fish being the main protein sources. Participants learned various culinary techniques to prepare fish, such as fish and vegetable curry and masala fish.Nutritious breakfasts were presented, with whole grains, fruits, vegetables, nuts, and seeds, and milk tea (chai) accompanied by fruit and nuts. Many participants presented healthy substitutes for traditional sweet dishes, stating that maintaining their intake is important for their heritage.
Practical Implication: The Harvard Healthy Plate approach, a structured dietary method, has been shown to improve dietary habits. Participants learned to prepare balanced meals using vegetables, protein sources, and whole grain carbohydrates. They reduced red meat consumption and incorporated protein-rich alternatives like lentils, fish, and eggs. They also learned cooking techniques for fish, incorporating nutritious seafood into their diet. They introduced healthy breakfast choices, substituting traditional foods with healthier ones, and using olive oil and water for cooking.
Conclusion: This study demonstrates that photovoice is a practical approach to assess the improvements in the dietary habits of Pakistani women and to empower them to become ambassadors of healthy eating habits for their community.
Keywords: Photovoice, Pakistani women, empowerment, community-based participatory research (CBPR)

INTRODUCTION

Pakistani women residing in Catalonia have a complex sociodemographic and health profile, as apart from having a high prevalence of obesity and type 2 diabetes (T2D) they are also one of the most marginalized groups residing in Catalonia[1,2]. Most of them have migrated due to the family reunification processes initiated mainly by the male members of the family especially father or husband[2]. However, in addition to being a minority in comparison to the male population of their community (currently 57.034 inhabitants of Pakistani origin reside in Catalonia representing the seventh foreign population, of which only 31% are women), they also face more cultural and linguistic barriers which hinder their access to academic and professional areas[3]. Due to these barriers, their communication with the health professional is also greatly affected. Their participation in standard health and nutrition promotion programs is also scarce since they are not adapted to their specific needs in aspects of language and culture[4]. Although the Catalan context lacks projects to promote healthy eating habits among Pakistani women, some countries have successfully designed and implemented culturally and linguistically appropriate food education programs that have proven effective in improving eating habits and the nutritional status of immigrant women of Pakistani origin[5,6].

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In a similar vein, in order to improve the health and nutrition status of Pakistani women residing in Catalonia, we approached them through community-based participatory research (CBPR) which is an effective strategy to promote and improve the health of marginalized communities[7,8]. Based on CBPR's principles we co-designed the first culturally and linguistically adapted food education program for Pakistani women living in Catalonia called PakCat Program[9].

One of the primary goals of this program was to bring participants closer to their traditional dietary pattern based on plant-based, minimally processed, fresh, seasonal and locally grown foods, which they drift away from due to migration[10,11,12]. The attainment of this goal meant an increase in the consumption of fruits, vegetables, legumes and nuts, and a reduction in the intake of salt, sugar, red and processed meat and ultra-processed foods.

Another major goal of the Pak Catprogram was to make Pakistani women residing in Catalonia visible and empower them to become promoting agents of healthy eating habits. To accomplish and assess these two goals Photovoice methodology was employed. Photovoice originally described by Wang and Burris[13], is a CBPR visual technique with three main objectives: (1) to enable people to record and reflect their community's strengths and concerns, (2) to promote critical dialogue and knowledge about important issues through large and small group discussion of photographs, and (3) to reach policymakers.

This technique has been widely and effectively used both to determine the eating behaviours and the food environment of

various marginalized groups)[14,15], and to empower women and convert them into health promoters[16,17]. However, to our knowledge, it has not been applied to immigrant women of Pakistani origin residing in Western countries.

Thus, we implemented the Photovoice technique to make immigrant women of Pakistani origin living in Catalonia visible and introduce the strengths of their dietary pattern to the community, particularly to the policymakers, since due to the cultural and linguistic barriers they have limited opportunities to express their concerns or potential in the public domain. This paper aims to illustrate: (1) the assessment of improvement in the dietary pattern of Pakistani women participating in the (blinded for the peer review) program through photovoice, and (2) the effectiveness of the photovoice technique in empowering and making them visible.

METHODS

Study Design and Participants: In this CBPR we implemented a mixed-method randomized control trial (RTC) approved by The Bioethics Commission of the University of Barcelona (CBUB) in June 2021 after a full review. This study was carried out in adjacent areas of Barcelona, which is home to 87% of Catalonia's foreign population of Pakistani origin[3]. Specifically, the research was conducted in Badalona and Santa Coloma de Gramenet, two and, respectively, the second and fourth most populous municipalities in Catalonia by the Pakistani population.

The recruitment was done with the support of The FundacióAteneu Santa Roc (Badalona) and Casa Àsia (Santa Coloma de Gramenet) two entities working to promote the integration and adaptation of Pakistani women in the host community. Each year, these organizations assist 50 to 60 women who actively participate in their language learning programs. After obtaining written consent from both institutions, we invited all their female students of Pakistani origin and their closest acquaintances to participate in the study. Any adult (>18 years) immigrant woman of Pakistani origin with residence in Badalona and Santa Coloma de Gramenet who voluntarily wanted to participate in the study was included, while women with a diagnosis of cognitive impairment or any physical illness that may pose challenges to their participation in the study and those who did not agree with the ethical conditions of the study were excluded. A total of 137 women (70 from Casa Àsia and 67 from Fundació Ateneu Sant Roc) accepted to become part of the study. The basic characteristics of participants are summarised in Table 1

Table 1. Basic characteristics of participants.

Basic characteristics of participants	Intervention group	Control group	Bilateral significance	Basic characteristics of participants	Intervention group	Control group	Bilateral significance
Age (years)				**Years of residence in Catalonia**			
Mean (SD)	37.4 (10.9)	37.4 (10.7)	0.99	Mean (SD) Range	6.7 (4.5)	6.3 (5.4)	0.66
Range	19-63	18-60			0.2-19	0.3-23	
Marital status				**Reason for migration**			
Single	13(18.6%)	11 (16.4%)	0.71	Family reunification	67 (95.7%)	67 (100%)	0.12
Married	52 (74.3%)	54 (80.6%)		Others	3 (4.3%)	0 (0%)	
Divorced	3 (4.3%)	1 (1.5%)					
Widowed	2 (2.9%)	1 (1.5%)					
Education				**Languages**			
No qualifications	0 (0%)	2 (3%)	0.94	Urdu and Punjabi	23 (32.9%)	22 (32.8%)	0.69
Early childhood education	6 (8.6%)	4 (6%)		Urdu, Punjabi, and English	19 (27.1%)	20 (29.9%)	
Primary education	1 (1.4%)	7 (10.4%)		Urdu, Punjabi, English & Spanish	26 (37.1%)	17 (25.4%)	
Secondary education	23 (32.9%)	17 (25.4%)		Urdu, Punjabi, English, Spanish			
Higher education	40 (57.1%)	37 (55.3%)		& Catalan	2 (2.9%)	8 (11.9%)	
Profession				**Household members**			
Teacher	9 (12.9%)	12 (17.9%)	0.35	1-3 persons	10 (14.3%)	12 (17.9%)	0.97
Health professional	2 (2.9%)	4 (6%)		4-6 persons	44 (62.9%)	37 (55.2%)	
Housewife	47 (67.1%)	43 (62.7%)		> 6 persons	16 (22.9%)	18 (26.9%)	
Supermarket cashier	6 (8.6%)	3 (4.5%)					
Others	6 (8.6%)	6 (9%)					
Occupation				**Working members of household**			
Occupied	7 (10%)	10 (14.9%)	0.39	Mean (SD)	1.5 (0.7)	1.7 (1.2)	0.29
Unoccupied	63 (90%)	57 (85.1%)		Range	0-4	0-5	

Intervention: The study was developed in 5 different phases: dissemination and recruitment, pilot study, baseline data collection, implementation of the food education intervention and evaluation. To begin, introductory sessions to present the project were held with the women belonging to both entities, which resulted in a final sample of 137 women who voluntarily consented to take part in the study by signing a written informed consent translated in Urdu.In the next phase, a pilot study was carried out with 6 women, who were not included in the main study,to assess the cultural and linguistic adequacy of measuring instruments and the food educational materials by organizing 3 general sessions about health and nutrition. Hereafter, the data collection phase was initiated which was carried out by combining qualitative and quantitative methodologies. From the quantitative perspective, participants answered an individual survey in Urdu with the help of a multilingual nutritionist while the use of qualitative perspective was based on conducting 6 focus group (FG) discussions (3 in both municipalities) to comprehendtheir dietary pattern along with the factors that influence it and adapt the intervention to their needs. Subsequently, the participants from Badalona randomly became the control group and those from Santa Coloma de Gramenet, the intervention group. To implement the intervention efficiently, participants were divided into small subgroups of (12-15 women). The control group received 3 general sessions on healthy eating while the intervention group participated in 10 educative sessions based on the Transtheoretical model for 10 weeks. Each weekly session had a duration of 90 minutes, and it was conducted by a multilingual nutritionist in Urdu and Punjabi language at different community spaces.

Photovoice activity: Photovoice was the 10th and last session of the program, and it was only implemented with the intervention group. During the first three sessions of the program, participants were made aware of the importance of eating healthily. Furthermore, the basics of healthy eating were also explained. In the fourth session, the value of the traditional dietary pattern of participants was highlighted and in the fifth, sixth and seventh sessions, each block (more, change and less) of the Catalan nutrition guideline "Petitscanvis per menjarmillor (small changes to eat better)" was analysed. In the last two sessions, the topics of purchasing healthy food and preparing a balanced menu were worked on. The final session of the program was dedicated to the Photovoice methodology in which the procedures developed by C.C Wang[18,19] specifically for women's health were followed.

In order to correctly apply the photovoice method, we presented the photovoice activity to the participants during the seventh session, which consisted of capturing an image of the healthy version of their favourite dish with their mobile phone. After confirming that every participant has a mobile device with a camera, we ruled out the distribution of professional cameras for their convenience. Apart from explaining in depth the process of

image capturing, we also presented the SHOWeD[18,19]; (original: What do we See here? What is really Happening here? How does this relate to our lives? Why does this situation, concern, or strength exist? and What can we do about it?") which were adapted as follow: "What is the name of this dish? What is the traditional recipe for this dish? What changes have you made to this dish to make it healthier? What does this dish remind you of? Explain it in 3-4 words."

Throughout the last two sessions, the participants submitted the final photographs of their meals (via WhatsApp), along with the name of the dish and 3-4 words related to it to the multilingual nutritionist who conducted the session. All the concerns that arose during the photography process were also addressed by her.

We gathered the received images in a PowerPoint. Each slide contained a photograph of the dish and the 3-4 words related to it along with the name of the participant. We created a separate PowerPoint for each fivesubgroups.For the photovoice session, we invited communityreferents from different fields (personnel from the referral hospital, members of the municipality's town hall, and the directors of the entity where the sessions were being held)to each group.

The session began by introducing the visitor to the group and revising the photovoice activity. Hereafter, we projected the PowerPoint. Each participant presented her dish and responded to the SHOWeD questions. After the presentation ended, the attendees asked questions and provided theirfeedbackto every participant. A multilingual nutritionist actively observed each participant's intervention and took notes on the final discussion.

RESULTS

After analysing 70 images of healthy dishes, we identified the following improvements in the dietary pattern: the application of the Harvard HealthyPlate method to prepare lunches and dinners, a notable presence of fruit and vegetables, a minor presence of red meat,nutritious breakfast, and healthy alternatives to traditional sweet dishes.

The application of the healthy plate method to prepare lunches and dinners: A large part of the photographs was of lunch and dinner dishes elaborated through the application of the Harvard healthy eating plate: ½ plate of vegetables, ¼ whole grains and ¼ protein (Figure 1). Vegetables were present in the dishes in raw (salad) and cooked (vegetable curry) forms and were often accompanied by yoghurt sauce. The carbohydrate portion usually consisted of whole grain chapati or rice, however, pasta, potato, and quinoa were also observed in some dishes. The protein part was majorly composed of lentils, eggs and chicken, however several meals with fish were also observed. Although it was not noticeable in the photos, during the presentation session the participants explained that they prepared their meals with olive oil and accompanied them with water. For dessert, they mostly had seasonal fruit.

Figure 1. Example of Harvard's healthy eating plate applied to traditional Pakistani food (Pilaf rice with lamb curry, yoghurt sauce and salad)

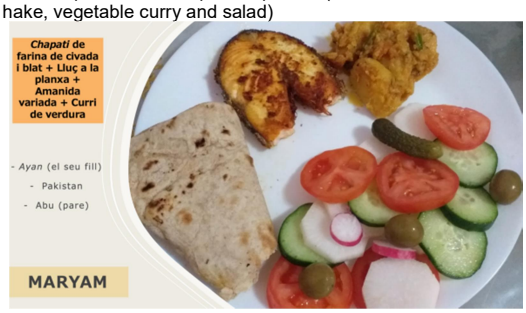
A notable presence of fruit and vegetables: A prominent presence of fruits and vegetables was observed in the dishes. Vegetables were mainly included in lunch and dinner, particularly in the form of curries and salads. The fruit was consumed as a dessert after meals or as a snack in the form of a fruit salad (fruit chaat). Some women presented photographs of sliced fruit explaining that they consume it as a snack.

During the presentation, a participant explained that as a working woman, she does not have much time to prepare snacks, so she takes 3 pieces of fruit and a handful of nuts to work and eats them in 3-4 takes throughout the day.

A minor presence of red meat: There was a low presence of dishes that included red meat. Lentils, eggs, chicken, and fish were predominately used as protein sources (Figure 2). In addition to conventional methods of cooking the meat, such as currying or adding it to rice, several new culinary techniques such as grilling, baking, and steaming were also observed.

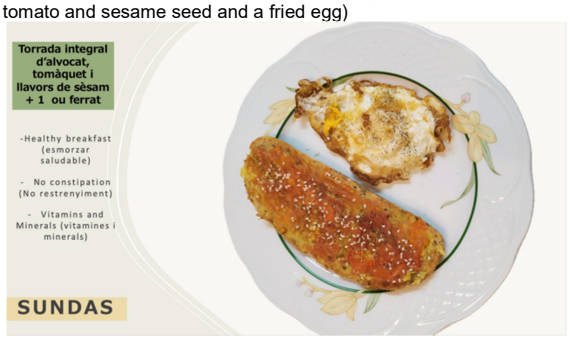
During the presentation, participants explained that incorporating fish into their diet was challenging since they disliked it due to its strong smell. Also, they were unfamiliar with its methods of preparation. But, during the sessions, apart from cleaning and manipulating the fish correctly they also learned various culinary techniques to prepare the fish that adjust to their traditional dietary patterns such as fish and vegetable curry and masala (spiced) fish.

Figure 2. Example of fish as a protein portion (Oatmeal and wheat chapati, grilled hake, vegetable curry and salad)



Nutritious breakfasts: Participants presented photographs of a variety of breakfasts made with whole grains, fruits, vegetables, nuts and seeds such as whole wheat bread with avocado, tomato and sesame seeds or oatmeal porridge with fruit and nuts (Figure 3). To complement the protein part, some reused the leftovers from the dinner which were mostly minced meat, chicken or legume curries. Almost all breakfasts were accompanied by milk tea (chai), which is typically served with sugar, but during the presentation, participants indicated that some have stopped adding sugar to their tea and others have progressively lowered the used amount to omit it completely. There were no processed or ultra-processed foods observed in the breakfast images.

Figure 3. Example of a healthy breakfast (wholemeal toast with avocado, tomato and sesame seed and a fried egg)



Healthy alternatives to traditional sweet dishes: Many of the participants presented healthy substitutes for traditional sugary

foods. During the presentation, they explained that they consider it important to maintain the intake of traditional dishes since their consumption is part of the heritage and they have many memories associated with them (Figure 4). So, continuing to consume them in their healthy form appears to be an appropriate and practical choice for them.

Figure 4. Example of a healthy alternative a traditional dish called "*piniyan*".

Once the photovoice session with each subgroup was finished, we organized a meeting with all the community leaders who attended the photovoice session of the project. The objective of this encounter was to conjointly develop ideas to enhance the visibility and impact of participants' photographs, stories, and recommendations to more people, especially policymakers and community leaders. As a result, it was agreed to create a slideshow.

So, to start, the town hall technicians printed 70 photographs and created a promotional poster for the opening ceremony of the healthy dishes exhibition titled "Pakistani Women: Ambassadors of Healthy Habits". The dissemination poster was sent to different places in the town such as clinics and hospitals, language learning schools and organizations that work with women. The presentation was held at a municipal reference entity that works to encourage and empower women, with the cooperation of the city council itself.Approximately 100 people attended the event, including the participating women along with their friends and family, municipal councillors, health workers and activists.

Figure 5. A participant recording healthy recipes in a hospital

The event was organised into 5 parts;it began with the project presentation, followed by 4 women sharing their experiences with the project. Later, 6 women presented their healthy dishes and explained their preparation process. Finally, after a quick question-and-answer session, the visitors viewed the exhibition. As it was the first time that Pakistani women living in Catalonia were acknowledged as ambassadors of healthy eating, they aroused the media's interest, and they were interviewed by several television channels and communication cooperatives. Currently, the exhibition is being itinerated to various places in the municipality.

Henceforth, several entities contacted us to co-create new initiatives to engage the participating women in different projects, particularly in the health and educational field. In the health field, they are currently collaborating with a hospital and a research centre dedicated to technological innovation in cooking to elaborate culturally and linguistically tailored educational material for Pakistani patients with type 2 diabetes mellitus. Their participation consists of recording recipes of commonly eaten Pakistani dishes in a healthy version (Figure 5).

In addition, they also collaborate with primary care centres by participating in their different activities to promote healthy eating habits, such as the organization of awareness stands on healthy lifestyles

In the educational field, once the dietary knowledge was consolidated, to overcome language barriers, we co-designed a Catalan language course applied to food and nutrition with the Consortium for Linguistic Normalization. A total of 20 participants ofthe PakCat Program are taking part in this course. After finishing it, they will visit various schools to deliver lectures on healthy eating. Some of them are participating in replicating the food educational sessions in different schools with other Pakistani women from the neighbouring municipalities.

DISCUSSION

The purpose of this study was to assess the improvements in the dietary pattern of Pakistani women participating in the PakCat program and to determine the effectiveness of the photovoice technique in empowering them and strengthening their presence in the community. Adapting the CBPR approach[8], we involved the participating women in all phases of the study as the project was conjointly designed with them in order toassist their cultural and linguistic needs, furthermore, to encourage their participation in the evaluative procedures we utilised the photovoice technique as an evaluation tool to determine the applicability of the study.

Although photovoice has been widely used to analyse and understand the food environment and dietary behaviour of various groups[20,21], its use as an evaluative tool for health and nutrition promotional interventions is less frequent. However, Kramer et al (2013) used photovoice as a participatory evaluation method in a 6-year community-based obesity prevention Initiative (Kaiser Permanente's Community Health Initiative) conducted with 50 participants. These authors used photovoice as a retrospective evaluation method in which participants took photos of the major changes related to the food environment and lifestyle that occurred in their communities because of the intervention at both baseline and follow-up. In contrast to this initiative, we did not collect pre-intervention food photographs, thus a visual comparison with the baseline was not attainable which we believe would have been enriching for the analysis, but it was not feasible due to a large sample size and the design of the study.

Another aspect in which our study aligns with Kaiser Permanente's Community Health Initiative is the reformulation of ShOWed questions, which was essential to use the photovoice methodology as an evaluation tool as it contributed in tailoring the questions to the study variables.

Due to technological advancement, several studies haveused mobile phones and various mobile phone applicationsto apply the photovoice technique[22,23], as we did in our study.

We also used photovoice to empower women to become ambassadors of healthy eating habits in their community. Although photovoice has not been employed specifically for immigrant women of Pakistani origin, it is frequently utilized to approach and empower various marginalized groups, particularly women. However, the concept of empowerment may vary depending on the context and there are no definitive tools to measure it.

Budig et al., (2018) defined 3 dimensions to assess women's empowerment in the Photovoice Villaverde project (Spain):

1) gain in knowledge and skills,
2) change in self-perception, and
3) access to and use of resources. This empowerment perspective has been utilized in different photovoice projects conducted with women[17].

Our study also adjusted to these 3 dimensions as the gain in dietary knowledge and skills was observed through the 70 well-

structured images of healthy dishes and the reflections of participants, the acquisition of the role of health ambassadors contributed positively to their self-perception and through the educational sessions participants were able to discover new community spaces and their services.

Limitations: While the study effectively accomplished its objectives, several limitations need to beconsidered. The size and quality of each photograph varied because of the variety of mobile devices used to capture them. As a standardization measure, we created a PowerPoint presentation in which every image was adjusted in a comparable arrangement.

Furthermore, the large size of the study made the image collection procedure challenging and as the images were only gathered at the end of the educational intervention, it was not possible to compare them with the baseline.

Implications for practice: The successful implementation of the photovoice methodology to assess the dietary improvements of Pakistani women participating in the Pak Catprogram will encourage its use as an evaluation tool in similar projects. The approach of empowering participants and converting them into ambassadors of healthy eating habits will provide sustainability to our study by allowing participants to design and participate in future health promotional initiatives in their community.

CONCLUSIONS

Photovoice is an effective approachto assess the improvements in the dietary habits of Pakistani women participating in the PakCatprogram and to empower them to become ambassadors of healthy eating habits for their community providing sustainability to the project. Future research will assess the contributions of these ambassadors to the society.

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