

RESEARCH

Open Access



# The policy and practice of establishing healthy eating in preschool children in the Republic of Srpska, Bosnia and Herzegovina: a qualitative study

S. Stojisavljevic<sup>1,2\*</sup>, B. Djikanovic<sup>3,4</sup>, D. Stojisavljevic<sup>1,2</sup>, D. Manigoda<sup>1</sup> and J. Niskanovic<sup>1</sup>

## Abstract

**Background** Healthy eating in preschools is a very important but challenging goal that can benefit from an adequate institutional and system approach. Five years ago, the Ministry of Education and Culture in the Republic of Srpska, Bosnia and Herzegovina, adopted a policy for healthy eating in preschools in the form of a rulebook and standards, whose use was not mandatory. The aim of this research was to determine the practices, perceptions, and experiences of preschool personnel related to the implementation of the abovementioned rulebook and standards.

**Methods** We applied a qualitative research method and conducted six focus groups: three with teachers ( $n = 37$ ) and three with managers in preschools ( $n = 19$ ). The qualitative data were analyzed according to the Framework Method.

**Results** We found that the practice of healthy eating in public preschool settings involves a certain number of facilitators and ongoing challenges. While there are no doubts that the existing rulebook and standards are facilitating efforts in establishing healthy eating in preschools, their implementation has not been an easy-going process, and they have encountered resistance that has appeared at several levels. The participants perceived cooks as resistant and “old-fashioned” in preparing meals, which was found to be a significant challenge that requires education training and ongoing supervision with support. Experiences with limited financial resources and rigid public procurement procedures make it difficult to obtain desired food items. All the participants agreed that long-term commitment is needed to achieve the full implementation of policy recommendations, together with tripartite and convergent education programs for personnel, parents, and children.

**Conclusion** Promoting proper nutrition in preschools requires a holistic approach that addresses both feasibility and attitudes toward policies, continuous education for staff, creative strategies for implementing new eating habits, and overcoming financial challenges. Collaboration with parents and community stakeholders is crucial in creating a supportive environment for healthy eating habits in preschool settings.

**Keywords** Healthy eating, Preschool, Perceptions, Challenges, Qualitative methods, Policy, Practice

\*Correspondence:

S. Stojisavljevic

stela.stojisavljevic@med.unibl.org; stela.blk@gmail.com

Full list of author information is available at the end of the article



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

## Introduction

Childhood obesity has dramatically increased in recent decades worldwide due to various individual, environmental, and social factors [1]. Childhood obesity is a risk factor for the development of a wide range of chronic noncommunicable diseases (NCDs), such as cardiovascular disease, diabetes mellitus, and cancer [2]. As such, health policymakers and other key actors should pay attention to preventing this disease and developing healthy lifestyles, including healthy nutrition, among children [3]. To achieve healthy nutrition among children, one of the most important settings where improvements are needed is preschool institutions. Preschool children spend almost one-third of a day there and consume the two most important meals: breakfast and lunch. Through play and informal learning methods, they have the opportunity to acquire new knowledge and healthy habits [4]. Preschool institutions have an educational role and character, although this is often not recognized by parents or the wider social community.

In addition to being directly related to working with children, preschool institutions are in constant interaction with family members, the community, and decision-makers, whose actions have an impact on their work. The results of numerous studies indicate that preschool institutions represent an environment in which it is possible to implement interventions and policies aimed at the adoption of proper eating habits and influence the behavior of children and their parents [4–7].

The importance of building a supportive preschool environment that helps address risk factors for NCDs and childhood obesity has been emphasized in several policy documents, such as the European Food and Nutrition Action Plan (FNAP) 2015–2020, which was recommended by the World Health Organization (WHO) for the Member States in the European Region [3, 8]. Since this document is not binding and the level of adherence to the recommendations has been different [9], little is known about the practice of healthy eating in preschools in the Republic of Srpska.

The Republic of Srpska is an entity of Bosnia and Herzegovina, a country that is positioned in South Eastern Europe. It belongs to the European WHO region, although the country is not a member of the European Union (EU). Nevertheless, the Ministry of Education and Culture of the Republic of Srpska, Bosnia and Herzegovina (later in the text: the Ministry) recognized the importance of preschool institutions and the role that this environment plays in addressing the adoption of healthy lifestyle habits in early childhood. In 2016, the Ministry adopted the “Rulebook on the Conditions and Methods of Achieving Nutrition, Care, Preventive Health and Social Protection of Children in a Preschool Institution” (later

in the text: the Rulebook) [10], which prescribes the conditions and manner of providing nutrition in preschool institutions, according to the well-established dogma for healthy eating: ensuring well-balanced energy intake and consumption, composing meals with a mix of diverse food types, with a focus on plant-based foods, fruits, vegetables, and grains, and establishing an environment that nurtures a positive attitude toward meals. The rulebook also defines “Standards and Norms of Proper Nutrition” (later in the text: the Standards), including meal recipes based on the season and age of children. Although these policies are not binding, since no penalties are envisaged for noncompliance, the Ministry recommended that preschool institutions apply the Standards so that children are provided with adequate and balanced nutrition as a prerequisite for proper growth and development, preservation and improvement of health and the formation of appropriate habits that enable healthy and quality of life.

However, as mentioned, the implementation of the Rulebook is voluntary, and a system of monitoring and evaluating its implementation in preschool institutions has not been established. Therefore, little is known about how preschools apply the Rulebook and Standards, i.e., what facilitators and ongoing challenges are in their implementation.

A recently conducted Cochrane Systematic Review stated that even when policies, programs, or interventions related to healthy eating in preschools and kindergartens are in place, many institutions fail to implement them routinely and achieve desired outcomes [11]. Many factors can influence the implementation and success of these policies, and one of these factors is the attitudes and opinions of stakeholders in this field: principals, educators (teachers), and parents, who act in a particular socio-economic context, i.e., the environment [12–14]. The understanding, knowledge, and attitudes related to the feasibility and sustainability of proposed policies related to healthy eating play crucial roles. Exploring stakeholders’ perspectives might bring valuable insights into the implementation process and provide lessons learned that can be used for structural adjustments and improvements in this field in other similar settings worldwide.

Therefore, the aim of this study was to determine the views, experiences, and practices of preschool personnel (managers and teachers) regarding the implementation of official policies related to healthy eating in preschool institutions in the Republic of Srpska, Bosnia and Herzegovina.

## Method

We used a qualitative research method and in April 2021 we conducted six focus groups: three focus group discussions (FGDs) with managers/directors of preschool

institutions and another three FGDs with personnel (teachers/educators, will be used interchangeably). We chose FGDs as the most cost-effective method, enabling us to collect a wide range of opinions simultaneously. In addition, FGDs constitute a platform for communication among different preschool stakeholders. A total of 47 participants (18 managers and 29 teachers) attended six FGDs. FGDs are selected to achieve group dynamics and discussion that build on top of each answer, thus providing a diverse set of responses and multiple perspectives.

### Recruitment of the participants

The participants in this research were preschool institutions that have been included in the “Nutrition Friendly Preschool/School Initiative,” which encompasses a wide range of activities that promote healthy nutrition and physical movement. Fifteen preschool institutions from 15 cities and towns all over the Republic of Srpska, Bosnia and Herzegovina (Banja Luka, Gradiška, Derventa, Doboj, Bijeljina, Prnjavor, Trebinje, Foča, Nevesinje, Pale, Zvornik, Vlasenica, Milići, Bratunac, and Srebrenica) were involved in this initiative, and they all received invitations for participation in the FGDs.

The invitation to participate in the FGDs was sent by e-mail to the directors of preschool institutions, with a request to take part personally in the focus group. In addition, directors were asked to invite two teachers, one with the shortest working experience and the other with the longest working experience, to provide insight into various perspectives and opinions in which age might be relevant.

### The process of FGDs

After the managers and teachers confirmed their participation in the focus group, they were informed about the principles of anonymity and free will for their involvement in the research. All of them agreed to take part in the FGDs, as they signed a declaration of voluntary participation in the research and consented to the audio recording of FGDs.

The FGDs were led by a moderator with experience in conducting qualitative research, who ensured that each participant had a chance to express his/her opinion and thoughts. In addition to the moderator, there was a facilitator/observer who was in charge of the technical aspects of organizing and conducting focus groups, as well as taking notes during the FGDs and observing the group dynamics and nonverbal communication of participants. A pre-prepared semi-structured interview guide with a set of relevant open-ended questions was used to conduct every FG discussion. The duration of FGDs was

approximately 1.5 h (in the range of 1 h 10 min to 1 h 57 min).

Data saturation was achieved after the fifth focus group, aligning with previous literature findings that conducting between 4 and 8 focus groups is adequate for reaching data saturation [15]. This is particularly true when the study population is homogeneous, as in our case.

### Data analysis

Qualitative data analysis of FGDs was conveyed based on a Framework method [16]. The main units of research were transcripts, notes, and audio records. After each FGD, the moderator and facilitator briefly discussed the findings and promptly prepared notes. Audio records were transcribed verbatim, and the moderator checked the accuracy of randomly selected transcripts to ensure their quality. Qualitative data analysis was performed by the moderator and facilitator separately in an iterative process that consisted of reading the transcripts and identifying the main themes and categories until a stable coding framework was achieved, in a consensus of both the moderator and facilitator [16]. In the next phase, transcripts were coded, and researchers compared assigned codes and harmonized them to achieve agreement in the definition of categories and further interpretation of the data. Disagreements on one code were discussed with a third researcher to reach a consensus. Data interpretation was supported by presenting representative quotes for each finding.

### Ethical considerations

A qualitative study was conducted as part of the “Nutrition-Friendly Preschool Initiative” program in the Republic of Srpska, Bosnia and Herzegovina, which was conducted in accordance with the Declaration of Helsinki, approved by the Ministry of Health and Social Welfare and the Ministry of Education and Culture of the Republic of Srpska, supported by UNICEF BiH. Participation in focus groups was voluntary and anonymous. All participants signed a voluntary participation form and consented to be recorded.

### Results

Six focus groups were conducted, three of which involved teachers and three of which involved managers, comprising a total of 48 participants. The response rate among teachers was 96.67% (one teacher was unable to attend for health reasons), whereas among managers, it was 105%, as they themselves invited additional staff relevant to this topic to be discussed (Table 1).

**Table 1** Structure of participants in focus groups according to sex, level of education, and location, Republic of Srpska, Bosnia and Herzegovina

	Teachers	Managers	Total
<b>Sex</b>			
Female	25	13	<b>38</b>
Male	4	6	<b>10</b>
<b>Level of education</b>			
Secondary education	–	9	<b>9</b>
Higher education	29	10	<b>39</b>
<b>Location of focus group</b>			
Banja Luka	10	4	<b>14</b>
Trebinje	8	8	<b>16</b>
Zvornik	11	7	<b>18</b>
<b>Total</b>	<b>29</b>	<b>19</b>	<b>48</b>

In the qualitative data analysis of managers' and teachers' perspectives on healthy eating in preschools, we identified four major themes and two to five categories of main findings within each theme. These themes are presented in Table 2 and elaborated on in the following text.

#### Practices related to actual nutrition policies for preschool children

Most of the respondents believed that the existing Rulebook and Standards are tools that facilitate work in

preschool institutions in regard to promoting proper nutrition and physical activity, whereas slightly fewer than one-third of respondents believed that these documents do not help preschool institutions in their work due to the impossibility of implementation.

Nevertheless, all the participants agreed that introducing the Standard improved nutrition in preschool institutions. Foods not recommended for children's nutrition, such as sugar-rich foods, have been reduced or removed from the menus, and fruit snacks have replaced "sweet" snacks.

*"Out of five days, two days meals are prepared according to the book (Standards), and the other three are not." (teacher)*

*"A lot is implemented, but not all." (manager)*

According to the director's statement, two preschool institutions fully implemented the Rulebook and Standards, whereas in other preschool institutions, partial implementation was reported. The application of the Rulebook is most often absent in regard to the continuous education of chefs and the application of the Standard in providing the necessary ingredients for the recommended menus. The directors and teachers of all preschool institutions commonly believe that ensuring proper nutrition in preschool institutions is a major challenge and that additional efforts from both the

**Table 2** Themes and categories from focus group discussions

Themes	Categories within theme
<b>Practices related to the actual policies about the nutrition of preschool children</b>	<ul style="list-style-type: none"> <li>• Rulebook and Standards are helpful as they set up the scene for enabling healthy eating</li> <li>• Rulebook and Standards are sometimes too ambitious and unfeasible</li> <li>• Inconsistencies in implementing actual policies and recommendations within preschools and among preschools</li> <li>• Challenges in continuously educating kitchen chefs in providing necessary ingredients, etc.</li> </ul>
<b>Perception of personal knowledge and accountability about healthy eating</b>	<ul style="list-style-type: none"> <li>• Managers believe their personal knowledge is not relevant, but kitchen chefs' knowledge is</li> <li>• Managers consider themselves committed and accountable for providing healthy eating</li> <li>• Educators consider themselves accountable for transferring healthy habits to children, although they have some dilemmas about proper nutrition</li> <li>• Educators' age is relevant for their readiness to accept novel knowledge toward healthy nutrition</li> <li>• Both managers and educators agreed that parents' knowledge and attitudes are very important in introducing new eating habits</li> </ul>
<b>Experiences in applying new eating habits</b>	<ul style="list-style-type: none"> <li>• Children were refusing to eat diverse meals with more vegetables</li> <li>• Some children remain hungry, and therefore unwilling to undertake planned activities</li> <li>• Learning by role model is compromised when educators are not supposed to eat the same food as children</li> </ul>
<b>Limited financial resources for improving eating habits</b>	<ul style="list-style-type: none"> <li>• Local budgets for preschool institutions are different, affecting the possibilities of obtaining healthy ingredients, modernizing kitchens, employing more staff with specific qualifications, providing continuous education, etc.</li> <li>• The law on public procurement is compulsory and rigid, which makes the purchase of desired ingredients pretty demanding and difficult</li> </ul>

management and other employees in preschool institutions are needed.

#### Perception of personal knowledge about healthy eating

We found that the perception of personal knowledge about healthy eating somewhat differed between managers and teachers in preschool institutions.

When managers are concerned, more than half of them perceive their level of knowledge related to healthy nutrition as insufficient. However, they also believe that their own knowledge is irrelevant to the overall practice of healthy eating in preschools. They valued their commitment to providing necessary conditions for healthy eating, emphasizing their managerial role in ensuring that sufficient financial and other resources are needed for purchasing desired ingredients. They found that knowledge of kitchen chefs is more important and relevant than their own, and again, they noted that cooks do not have adequate knowledge and experience and do not have continuous education:

*“A lot depends on the cook, how much desire she has, knowledge, and motivation. She (the cook) is old, and she has different beliefs. She says the children will not eat this, and now we got a young cook as if we were a restaurant and a pastry shop; I have to tell her to stop (said laughing).” (manager)*

*“In our kitchen works cooks who are trained for the military kitchen, and what they cook is not for children.” (manager)*

*“The cook was very stubborn, and she pushed us away... we had to work with her first and explain why she had to cook differently. Little by little, it worked out.” (manager)*

*“We are lucky to have a nutritionist. When we get stuck in the kitchen, she tells us what we need, and we can obtain information more easily.” (manager)*

When preschool teachers are concerned, many find that their own level of knowledge related to healthy nutrition is insufficient. They also find that continuous education in that field is very important since their role is to advocate for healthy eating among children and parents and provide them with necessary information about it.

*“We educators should learn a lot more about healthy eating; we are the ones who watch and teach that child every day.” (teacher)*

Educators with more years of experience stated that it is difficult for them to understand the change in the principles of proper nutrition because “what they once learned and knew is not applicable now”.

*“I would like to know why whole milk is not given to children; it used to be normal.” (teacher)*

On the other hand, younger educators stated that even when they have certain theoretical knowledge, they need continuous upgrading to fully and properly apply it in practice:

*“We are constantly educating ourselves, but we cannot know everything in regard to nutrition.” (teacher)*

Regardless of the level of self-perceived knowledge about proper nutrition, educators note that the concept of proper nutrition is extremely broad and includes the culture of eating, to which special attention is directed in preschool institutions:

*“Today, it is important to make children aware of what they eat and how they eat so that they do not eat with a mobile phone in their hand; they just yawn and do not look at what they are eating.” (teacher)*

Both directors and educators emphasized that in addition to the continuous improvement in the knowledge of educators and other employees in preschool institutions regarding proper nutrition, parents need to be educated as well. Parents' role, collaboration with them, and their support are indispensable in promoting healthy eating habits in order to ensure consistent attitudes related to eating in both preschool and home environments. They state that it often happens that parents completely unwittingly retaliate against educators and children when, in the presence of the child, they suggest to the educator that their child does not have to eat a certain type of food because he does not like it:

*“If he does not want to, he does not have to eat, just give him a piece of bread.” (teacher)*

*“Will there be anything else, she does not like it.” (teacher)*

*“They will not eat it for you; they do not even eat it at home.” (teacher)*

#### Experiences in applying new eating habits

Applying new eating habits in preschool institutions, according to the Standards, requires many investments in all segments of the preschool institution's work and activities: the procurement of adequate ingredients; adjustments and changes in the way meals are prepared and served; informing children and parents with the new

menus; persuading children to consume new menus; and so on. Managers and educators pointed out that at the beginning of the implementation of the Standards, they were forced to throw away a large amount of food since kitchens were not adequately equipped, and the chefs were not skilled enough in preparing the recommended menus. Even if new menus were prepared, many children did not want to eat the offered food. In addition, some parents protested because they could not bring sweets or snacks to celebrate their children's birthdays; thus, in the beginning, their support was lacking.

From the educator's point of view, the greatest challenge was teaching the children to eat a variety of foods that were not previously on their menus. Specifically, they stated that at the beginning, the children refused to consume new meals, which negatively reflected not only on the children themselves but also on their ability to be involved in group educational activities that were supposed to be conducted at the preschool institution.

*"I'm against children being hungry; if children remain hungry, there is a problem for me... When a child is hungry and sleep deprived, I cannot perform regular activities with them." (teacher)*

The teachers noted that the introduction and acceptance of the new menus was a slow process that required the joint work of all employees and the creative imagination of many teachers. They stated that during the introduction of the new menus, they changed different approaches and implemented numerous activities to persuade the children to accept the new way of eating. We found that in a certain number of preschool institutions, teachers were obliged to eat the same food that was served to the children. Eating the same meal at the same time as the child does has been perceived as an opportunity to persuade them to eat healthily. Educators are aware that they are role models for children, and by following what the role model does, children might be more prone to accept and apply changes in their manners of eating. Eating time that was spent together was used to educate children about the food they were consuming at that moment and its comparative advantage, making it more interesting and fun. This approach makes it much easier for them to work with children on accepting proper nutrition.

However, in some other preschool institutions, this was not a required practice: educators were allowed to eat different foods at different times. Typically, this was found in communities with lower incomes, where educators were allowed to choose between financial remunerations for their own meals or to eat the same meal as children. Managers of preschool institutions emphasized that this problem could be easily solvable, although some

educators might not prefer the lack of choice in their own nutrition.

#### **Limited financial resources for improving eating habits**

Most managers stated that the first and most dominant challenge to implementing proper nutrition is a lack of financial resources. They pointed out that the Rules and Standards are created and adopted by the Ministry of Education and Culture of the Republic of Srpska, whereas preschool institutions are financed from local budgets, i.e., budgets of cities and municipalities.

*"We had to convince the founder to increase the budget related to children's nutrition. We succeeded, and now it is easier." (manager)*

The problem of financing preschool institutions is particularly pronounced in less developed municipalities and cities. Typically, they have not recognized the importance of proper nutrition in preschool institutions and have other priorities for the distribution of scarce resources, being unwilling to increase the budget for this reason. This makes the process of negotiation very demanding and nerve-wracking:

*"There is a limited budget, although the introduction of proper nutrition does not require a much larger budget than we have, but in order to get even a minimal increase, you need to lose your nerves and a lot of times in the negotiations." (manager)*

More than half of the managers stated that limited financial resources negatively affect every single aspect of children's nutrition and overall well-being. While the number of children in many preschool institutions has doubled in the last decade, their budgets have remained almost the same size. In addition to being unable to purchase the ingredients necessary to prepare meals in accordance with the Standards, the management of preschool institutions was also unable to hire an adequate number of different types of staff, such as educators, cooks, and cleaners, as well as pedagogues, psychologists, speech therapists, nutritionists, etc. Managers stated that limited financial resources also represent a barrier to the continuous education of chefs and educators.

Another financial issue that all managers reported was the need to comply with the *Law on Public Procurement*, which is very rigid and limits every single independent managerial initiative for improvement. It affects the application of the Standards as well as the ability to prepare nutritionally adequate meals according to them. The law forbids the procurement of goods from local producers in open markets; management is allowed to procure goods just from the retail chains, who respond and win at the tenders.

*“Public procurement greatly limits the organization of providing food... you have to take care of prices, the procedure for announcing tenders, and so on... and if the tender fails, then you’re in real trouble; it is an even bigger problem.” (manager)*

They reported that the purchase of fresh fruits and vegetables is particularly troublesome because retail chains are often unable to deliver fresh and high-quality fruits and vegetables. This problem is very common in small communities, with a limited number of suppliers (retail chains) applying for tenders, and preschool institutions are forced to purchase from available suppliers, although they are not always satisfied with their services.

*“We ask them to deliver raspberries, and when the supplier is supposed to deliver the goods, he says that there were no raspberries and instead delivers bananas, pears, whatever... and then we have to adjust the menu for that day.” (manager)*

## Discussion

This study aimed to determine the views, practices and experiences of preschool personnel (managers and teachers) in implementing official policies related to healthy eating in preschool institutions in the Republic of Srpska, Bosnia and Herzegovina. To the best of our knowledge, this is the first study that investigated the process of improving nutrition for preschool children after the adoption of these policies. Proper implementation of policies might improve health outcomes among children [17], but many factors must be taken into consideration [4, 11, 18]. Although official policies, such as the rulebook with standards and norms of proper nutrition in preschools are in place [10], and much appreciated by the personnel in our study, their implementation is not mandatory, and we found that the existence of these policies is not a sufficient condition for achieving healthier eating habits. This corroborates findings and experiences from the implementation of the World Health Organization (WHO) European Food and Nutrition Action Plan (FNAP) 2015–2020 among Member States in the WHO European Region [9, 19].

The results from our focus group discussions revealed a number of barriers that appear in the process of establishing an environment where healthier choices for children’s nutrition are possible. Introducing new rules and standards about proper nutrition is the process of change, and every change requires adequate management, including investments in people who are supposed to facilitate the change [20]. We found personnel’s ambiguity and being unsure about proper nutrition, the irresponsiveness or resistance of the chefs

who are preparing meals, and a lack of understanding of the importance of joint and convergent attitudes and synergistic actions of some teachers and parents. These findings indicate that insufficient attention was given to the personnel, who are the key persons for applying the change. Unsurprisingly, whenever the process of change is not supervised or monitored for compliance, with a lack of appropriate feedback and support, institutions fail to implement the change [13]. It has already been described as a practice in preschools, even in developed countries with more resources, such as Australia, the United Kingdom, and Sweden [12, 21].

Personnel’s dilemmas and resistance could be overcome by proper education and training, which increases an intervention’s overall effectiveness, as found in a systematic review [22]. Ongoing supervision and support should be a compulsory part of the change, and the effectiveness and cost-effectiveness of state-of-the-art interventions aimed at improving nutrition, such as APPLE Schools in Alberta, Canada, should show promising results [23], as should the program “Join the Healthy Boat” in primary schools in Germany [24].

Although some basic training was provided within the “Nutrition-Friendly Preschool Initiative,” which involved participants in this study, ongoing supervision and support were not present. This finding is also in line with findings from similar health promotion and education studies conducted in low-resource settings [25–27]. On the other hand, it is well known that in developing settings, where projects with external financing are completed once, their sustainability is questionable [11]. Build capacities are “melting” over time, and it is up to the enthusiasm of the key persons, which is also not limitless, and the extent of introjected new values and attitudes to continue with the novel practices, if they do not require additional financing [28].

However, healthy nutrition requires financial resources for the procurement of healthy ingredients. In our study, we identified it as a particularly challenging aspect since public procurement procedures are not flexible enough to accommodate the purchase of desired goods. These official procedures discourage efforts to apply change, and the participants in our study needed to compromise and make the best alternatives to preferred meals. It is well known that public spending on societal resources is under scrutiny in other low- and middle-income settings [29]. This finding provides a strong message to decision-makers who are in charge of improving public health through system solutions: adequate budgeting and allocation of resources with friendly public procurement procedures can make a difference and increase the probability of achieving desired public health outcomes in both the short and long run.

Raising awareness of the benefits of healthy nutrition among preschool children is particularly important, and healthy messages should be sensibly created in a way which targets their current interest and values. Observation of children's preferences can be done by analyzing leftovers after meals, which was a subject of the research that was also conducted within this project.

### Limitations of the study findings

Although qualitative research designs are intended to provide a deeper understanding of the phenomena and their purpose is not to generalize findings, we are aware that our results cannot be extrapolated to the whole population of preschool managers and teachers in the Republic of Srpska. The nature of our sample is biased since participants were involved in the program "Preschool Institutions - friends of Proper Nutrition," and it certainly increased their capacity to apply the principles of healthy eating in their working environment. The results of our study could be "the best possible scenario," which means that dilemmas, challenges, and barriers in other preschool settings throughout the country could be presented to a greater extent.

Our aim was to explore the perceived feasibility of implementing official policies on healthy eating in preschools. However, a comprehensive and objective evaluation of the actual extent of policy implementation was beyond the scope of this research. The same applies to the evaluation of the effectiveness of the program "Preschool Institutions—Friends of Proper Nutrition," which might be the subject of some upcoming research.

### Conclusion

In conclusion, promoting proper nutrition in preschools requires a holistic approach that engage whole community, addresses attitudes toward policies, continuous education for staff, creative strategies for implementing new eating habits, and overcoming financial challenges. Collaboration between children, parents and community stakeholders is also crucial in creating a supportive environment for healthy eating habits in preschool settings.

### Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s40795-025-01017-1>.

Supplementary Material 1

### Acknowledgements

The authors are grateful to the managers and teachers of preschool institutions who voluntarily attended focus group discussions.

### Authors' contributions

S.S. and D.S. designed the study, developed research protocols, and conducted focus groups together with D.M. and J.N. S.S. and B.Dj. analyzed and interpreted the transcripts and wrote the manuscript. All the authors read and approved the final version of the manuscript.

### Funding

UNICEF Bosnia and Herzegovina supported the implementation of this study. The funder was not involved in the study design or the interpretation of the results. SS, JN, and DM were the team members who implemented the "nutrition-friendly preschool-school initiative" in the Republic of Srpska, and DS was the coordinator. BDj was an external consultant for qualitative research methodology. BDj is a researcher on the project of the Ministry of Science, Technological Development and Innovation Republic of Serbia no. 451-03-66/2024-03/200110.

### Data availability

Transcripts of the focus groups might be available upon request.

### Declarations

#### Ethics approval and consent to participate

A qualitative study was conducted as part of the "Nutrition-Friendly Preschool Initiative" program in the Republic of Srpska, Bosnia and Herzegovina, which was approved by the Ministry of Health and Social Welfare and also the Ministry of Education and Culture of the Republic of Srpska, supported by UNICEF BiH. Participation in focus groups was voluntary and anonymous. All participants signed a voluntary participation form and consented to be recorded.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

#### Author details

<sup>1</sup>Public Health Institute of the Republic of Srpska, Jovana Dučića 1, Banja Luka 78000, Bosnia and Herzegovina. <sup>2</sup>Faculty of Medicine, University of Banja Luka, Banja Luka, Bosnia and Herzegovina. <sup>3</sup>Institute of Social Medicine, Faculty of Medicine, University of Belgrade, Belgrade, Serbia. <sup>4</sup>Centre-School of Public Health, Faculty of Medicine, University of Belgrade, Belgrade, Serbia.

Received: 20 August 2024 Accepted: 29 January 2025

Published online: 06 February 2025

### References

- Lee A, Cardel M, Donahoo WT et al. Social and Environmental Factors Influencing Obesity. In: Feingold KR, Anawalt B, Blackman MR, editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK278977/>.
- World Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: World Health Organization; 2013.
- European Commission. EU Action Plan on Childhood Obesity 2014–2020. [EU Background document] 2014. Available at: [https://health.ec.europa.eu/document/download/7c75c967-69c0-4cc2-8906-bc8b59f58a79\\_en?filename=childhoodobesity\\_actionplan\\_2014\\_2020\\_en.pdf](https://health.ec.europa.eu/document/download/7c75c967-69c0-4cc2-8906-bc8b59f58a79_en?filename=childhoodobesity_actionplan_2014_2020_en.pdf).
- Mikkelsen MV, Husby S, Skov LR, Perez-Cueto FJA. A systematic review of types of healthy eating interventions in preschools. *Nutr J*. 2014;13(1):56. <https://doi.org/10.1186/1475-2891-13-56>.
- Brand T, Jahn I, Pohlabein H, Böttcher S, Hense S, Hebestreit A, et al. Comparing strategies to improve the implementation of healthy nutrition in kindergartens: a prospective observational study. *J Public Health*. 2017;25(3):299–310. <https://doi.org/10.1007/s10389-016-0779-7>.
- Halbeisen G, Walther E. How to promote healthy eating in preschool children: evidence from an associative conditioning procedure with nonfood stimuli. *Appetite*. 2021;166:105472. <https://doi.org/10.1016/j.appet.2021.105472>.



7. Kostecka M. The effect of the "colorful eating is healthy eating" long-term nutrition education program for 3- to 6-year-olds on eating habits in the family and parental nutrition knowledge. *Int J Environ Res Public Health*. 2022;19(4):1981. <https://doi.org/10.3390/ijerph19041981>.
8. World Health Organization Regional Office for Europe. The Minsk Declaration. The life-course Approach in the context of Health 2020. Copenhagen: World Health Organization Regional Office for Europe; 2015.
9. Breda J, Castro LSN, Whiting S, Williams J, Jewell J, Engesveen K, et al. Towards better nutrition in Europe: evaluating progress and defining future directions. *Food Policy*. 2020;96:101887. <https://doi.org/10.1016/j.foodpol.2020.101887>.
10. Pravilnik o uslovima i načinu ostvarivanja ishrane, njege, preventivno-zdravstvene i socijalne zaštite djece u predškolskoj ustanovi. Official Gazette Republic of Srpska no. 88/2016.
11. Wolfenden L, Barnes C, Jones J, Finch M, Wyse RJ, Kingsland M, et al. Strategies to improve the implementation of healthy eating, physical activity and obesity prevention policies, practices or programmes within childcare services. *Cochrane Database Syst Rev*. 2020;2. <https://doi.org/10.1002/14651858.CD011779.pub3>.
12. Johannessen B, Helland SH, Bere E, Øverby NC, Fegran L. A bumpy road: kindergarten staff's experiences with an intervention to promote healthy diets in toddlers. *Appetite*. 2018;127:37–43. <https://doi.org/10.1016/j.appet.2018.04.008>.
13. Kovacs VA, Messing S, Sandu P, Nardone P, Pizzi E, Hassapidou M, et al. Improving the food environment in kindergartens and schools: an overview of policies and policy opportunities in Europe. *Food Policy*. 2020;96:101848. <https://doi.org/10.1016/j.foodpol.2020.101848>.
14. Matic I, Jureša V. Compliance of menus with nutritional standards in public and private kindergartens in Croatia. *Ronz Panstw Zakl Hig*. 2015;66(4):367–71.
15. Hennink M, Kaiser BN. Sample size for saturation in qualitative research: a systematic review of empirical tests. *Soc Sci Med*. 2022;292:114523.
16. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multidisciplinary health research. *BMC Med Res Methodol*. 2013;13(1):117. <https://doi.org/10.1186/1471-2288-13-117>.
17. Micha R, Karageorgou D, Bakogianni I, Trichia E, Whitsel LP, Story M, et al. Effectiveness of school food environment policies on children's dietary behaviors: a systematic review and meta-analysis. *PLoS One*. 2018;13(3). <https://doi.org/10.1371/journal.pone.0194555>.
18. Hung TTM, Chiang VCL, Dawson A, Lee RLT. Understanding of factors that enable Health promoters in Implementing Health-promoting schools: a systematic review and narrative synthesis of qualitative evidence. *PLoS ONE*. 2014;9(9). <https://doi.org/10.1371/journal.pone.0108284>.
19. World Health Organization (WHO). European Food and Nutrition Action (FNAP) Plan 2015–2020. Available at: <https://iris.who.int/bitstream/handle/10665/329405/9789289051231-eng.pdf?sequence=1>.
20. Matwiejczyk L, Mehta K, Scott J, Tonkin E, Coveney J. Characteristics of effective interventions promoting healthy eating for pre-schoolers in childcare settings: an umbrella review. *Nutrients*. 2018;10(3):293. <https://doi.org/10.3390/nu10030293>.
21. Lucas PJ, Patterson E, Sacks G, Billich N, Evans CEL. Preschool and school meal policies: an overview of what we know about regulation, implementation, and impact on Diet in the UK, Sweden, and Australia. *Nutrients*. 2017;9(7):736. <https://doi.org/10.3390/nu9070736>.
22. Hendrie GA, Lease HJ, Bowen J, Baird DL, Cox DN. Strategies to increase children's vegetable intake in home and community settings: a systematic review of literature. *Matern Child Nutr*. 2017;13(1). <https://doi.org/10.1111/mcn.12276>.
23. Ekwaru JP, Ohinmaa A, Tran BX, Setayeshgar S, Johnson JA, Veugelers PJ. Cost-effectiveness of a school-based health promotion program in Canada: a life-course modeling approach. *PLoS One*. 2017;12(5). <https://doi.org/10.1371/journal.pone.0177848>.
24. Kesztyüs D, Lauer R, Kesztyüs T, Kilian R, Steinacker JM, on behalf of the. Costs and effects of a state-wide health promotion program in primary schools in Germany – the Baden-Württemberg study: a cluster-randomized, controlled trial. *PLoS One*. 2017;12(2). <https://doi.org/10.1371/journal.pone.0172332>.
25. Mukamana O, Johri M. What is known about school-based interventions for health promotion and their impact in developing countries? A scoping review of the literature. *Health Educ Res*. 2016;31(5):587–602. <https://doi.org/10.1093/her/cyw040>.
26. Skar M, Kirstein E, Kapur A. Lessons learned from school-based health promotion projects in low- and middle-income countries. *Child Care Health Dev*. 2015;41(6):1114–23. <https://doi.org/10.1111/cch.12231>.
27. Verstraeten R, Roberfroid D, Lachat C, Leroy JL, Holdsworth M, Maes L, et al. Effectiveness of preventive school-based obesity interventions in low- and middle-income countries: a systematic review. *Am J Clin Nutr*. 2012;96(2):415–38. <https://doi.org/10.3945/ajcn.112.035378>.
28. Barry MM. Transformative health promotion: what is needed to advance progress? *Glob Health Promot*. 2021;28(4):8–16. <https://doi.org/10.1177/17579759211013766>.
29. Mills A. Health care systems in low- and middle-income countries. *N Engl J Med*. 2014;370(6):552–7. <https://doi.org/10.1056/NEJMr1110897>.

## Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.