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Original Article

Readiness of future preschool teachers in Kazakhstan to build a health-supporting environment: alignment with parents' priorities

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ABSTRACT

Little is known about future preschool teachers' readiness to apply nutrition knowledge in Kazakhstan. This study assessed their readiness to build a health-supporting environment and its alignment with parents' priorities. A cross-sectional comparative study included 60 third- and fourth-year students (30 each from Astana and Almaty; 30 had completed a nutrition module) and 60 parents of preschool children. Participants completed parallel questionnaires with an eight-item scale assessing the importance of different aspects of a health-supporting environment. Data were analyzed using Mann–Whitney, Kruskal–Wallis, Spearman's rank correlation, and χ^2 tests. Trained students scored higher than untrained students on objective knowledge (Me = 6.0 vs 4.0 out of 8, $P < 0.001$, $r = 0.73$), self-rated readiness ($P < 0.001$, $r = 0.85$), and readiness to engage with families ($P < 0.001$, $r = 0.85$). Self-rated readiness correlated with objective knowledge ($\rho = 0.641$, $P < 0.001$; $R^2 \approx 0.41$). Students' and parents' importance profiles showed negligible correlation ($\rho = 0.095$, $P = 0.82$). The widest gaps concerned parent communication, picky eating support, and professional boundaries ($\chi^2 = 26.70$–29.10, $P < 0.001$). Specialist training was associated with greater knowledge and self-rated readiness, while priorities remained misaligned with parents' expectations. Training should emphasize situational skills for communicating with families.

Keywords: Nutrition science, Health-supporting environment, Preschool teacher, Child nutrition, Self-assessment, Diet

Introduction

Current international guidelines on early childhood development treat healthy eating and nurturing care in the first years of life as key parts of nurturing care, alongside health, safety, early learning, and responsive attention [1]. Responsive feeding is an integral part of nurturing care and a condition for optimal nutrition in very young children [2]. A systematic review of the WHO's 2020 guidance points to the need to combine nutrition guidance with support for responsive care, early learning, and psychosocial support for caregivers [3]. In this view, preschools are settings where children's eating habits take root and where access to safe, quality food is secured [4-6].

A preschool's educational environment affects a child's eating behavior and health through the food offered, the daily schedule, adult modeling, and food-related educational activities [7].

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Training preschool teachers increases their knowledge of healthy eating and changes some practices. However, the effect on children's diets and their own behavior is much weaker if nutrition topics are not integrated into daily practice and do not rely on family involvement [8-10].

The preschool teacher acts as an intermediary, connecting institutional food requirements with what happens at home. An analysis of Yurkevich's pedagogy likewise emphasizes cooperation between families and educational institutions in children's upbringing [11]. Teachers help build a child's eating habits by modeling their own attitude toward food, creating conditions for calm mealtimes, supporting children who eat selectively, and helping families align home and preschool routines [12]. Whether a nutrition program works depends on how ready the teacher is to talk with parents about diet, explain the reasoning behind recommendations, and consider a family's cultural background [10, 13, 14]. In Kazakhstan, where the family remains the main actor in raising a child, coordinating the preschool's food policy with what parents do at home is particularly important.

The teacher does not diagnose, prescribe a medical diet, or replace a physician or dietitian. The teacher's job is to organize a safe food environment, follow approved protocols for allergies and intolerances, identify situations that need referral to a medical specialist, and communicate well with parents, including explaining why a restriction or extra measure is in place [15]. Understanding the basic principles of healthy eating and responsive feeding matters, but it only works alongside inter-professional coordination with health workers and dietitians.

Studies of preschool teacher training in different countries tell a similar story: nutrition and health promotion topics appear in the curriculum in fragments, and the emphasis sits on general questions of health protection and hygiene [12, 16]. Specialized training and modules on healthy eating improve teachers' knowledge and change some of their practices, but the durability of the effects and their transfer into everyday work remain limited [10, 17, 18].

The UNICEF report on early development monitoring in Kazakhstan notes that some parents doubt whether kindergarten food is nutritionally sufficient [19]. At the same time, little data show what nutrition knowledge preschool teacher preparation programs actually teach, how ready students are to apply it when building a health-supporting environment, or whether that readiness matches parents' priorities. The picture is more concerning than reassuring. National food consumption data from 2001 to 2018 and other scholars record a shift toward a less varied diet even as incomes rise [20, 21]. At the family level, in a sample of 390 children aged 1-6 in Central Kazakhstan cities, median intake of fiber, vitamin C, and calcium came in below norm across all age groups, and children aged 3-4 also fell short on iron. By contrast, sodium intake ran above norm. Parents' priorities were hardly connected with what children actually consumed [22, 23].

Objective, research tasks, and hypotheses

This study aims to assess how prepared pedagogical students (future preschool teachers) are to apply nutrition knowledge when they build a health-supporting environment, and to check how well that preparation matches parents' priorities. The main research questions are as follows: 1) do the objective knowledge and professional readiness of students who have taken specialist nutrition modules differ from those of students without such training; 2) how well does self-rated readiness match the objective test results; 3) do students' and parents' profiles of priority components of the health-supporting environment line up? Three hypotheses follow:

H1 is that students who have taken a dedicated course, module, or practical placement on nutrition and health promotion will score higher on objective knowledge and professional readiness;

H2 is that self-rated readiness will match objective test results only moderately;

H3 is that parents' priority profiles and students' readiness profiles will diverge on specific content components.

Materials and Methods

Study design

The study is a cross-sectional comparative analysis of two respondent groups: students at a pedagogical university majoring in Preschool Education, and parents of preschool-aged children attending kindergartens. The design uses parallel questionnaires that rate the same components of the nutrition-related health-supporting environment from two perspectives: future teachers and parents.

Object, sample, and context

The research object is the readiness of Kazakhstan's future preschool teachers to build a health-supporting environment based on nutrition knowledge and how well that readiness matches parents' priorities.

The sample included 60 third- and fourth-year students at a pedagogical university (30 each from Astana and Almaty) and 60 parents of preschool-aged children whose children attend state kindergartens in those cities. Student distribution by city, year of study, and training status is presented in **Table 1**. Parents were further described by family structure (two-parent/single-parent); that breakdown is in **Table 2**.

Table 1. Student distribution by city, year, and training status (n = 60).

City	Year	Trained (n)	Untrained (n)	Total
Astana	3	8	7	15
Astana	4	7	8	15

Almaty	3	8	8	16
Almaty	4	7	7	14
Total		**30**	**30**	**60**

Table 2. Parent distribution by city and family structure (n = 60).

City	Two-parent family (n)	Single-parent family (n)	Total
Astana	24	6	30
Almaty	23	7	30
Total	**47**	**13**	**60**

Period and location

Data collection ran from September 2025 to April 2026, which allows the study to account for the students' academic cycle and how kindergartens operate over a school year. Work took place at two pedagogical universities and five kindergartens in Astana and Almaty. That covers urban conditions, though it does not claim to represent the country as a whole.

Measurement instruments

Both students and parents rated eight areas of the health-supporting environment (nutrition fundamentals, mealtime routine and food environment, building eating behavior, picky eating, communication with parents, allergy and intolerance, professional boundaries, and outreach work) on a 1-5 scale. This shared scale was not included in the overall student-readiness score and was completed separately from the other questionnaire blocks. It directly compares the two groups' importance profiles under H3.

Student questionnaire. Beyond the importance scale, the student questionnaire has 20 items grouped under three readiness components: objective nutrition knowledge (8 multiple-choice test items with one correct answer); self-rated professional readiness (7 items on a 1-5 Likert scale), covering confidence in discussing nutrition with parents, supporting a picky eater, and following allergy protocols; and readiness to engage with families (5 items on a 1-5 Likert scale), reflecting the intent to open conversations about food, use educational materials, and take parents' emotional state into account [24]. The objective knowledge total was calculated as the number of correct answers (0-8); self-rating and family engagement scores were aggregated as means across the relevant items. The reliability of the self-rating and engagement scales was assessed with Cronbach's alpha: 0.955 for the self-rated readiness scale (7 items) and 0.94 for the family engagement scale (5 items).

Parent questionnaire. The parent questionnaire's eight measurement areas match the shared importance scale (see above). Beyond rating importance, parents also rated, on the same 1-5 scale, how confident they were that their kindergarten teacher was ready to support each component (8 items), for a total of 16 items per respondent.

Procedure

Data collection ran in two stages. In the first stage, students completed the questionnaire in class or online, before or after the nutrition and health promotion module. Completion of the specialist course was recorded, which allowed us to split the sample into "trained" and "untrained" students. In the second stage, parents completed the questionnaire at kindergartens or online after being informed about the research tasks and assured of anonymity. All data were anonymized. The student and parent data were compared only at the level of aggregate scores across the eight importance scale areas [25].

Statistical analysis

Given the Likert scale and sample sizes, we used non-parametric methods. The Mann-Whitney test compared objective knowledge and self-ratings between trained and untrained students. The Kruskal-Wallis H-test was used for differences across several groups (e.g., by year of study or city). Spearman's rank correlation coefficients tested the link between self-rated readiness and objective test results, as well as between students' and parents' importance scale profiles. Where needed, the χ^2 test compared the shares of respondents rating a component as "very important" or "highly delivered." The threshold for statistical significance was set at $P < 0.05$, with effect size and practical significance also considered. Descriptive statistics are reported as median and interquartile range (Me, Q1-Q3).

Results and Discussion

To test H1, students in the two groups were compared using the Mann-Whitney test **(Table 3)**.

Table 3. Objective knowledge and professional readiness of trained and untrained students.

Indicator	Trained, Me (Q1-Q3)	Untrained, Me (Q1-Q3)	U	P	r
Objective knowledge (0-8)	6.0 (5.0-7.0)	4.0 (3.25-5.0)	779.5	< 0.001	0.73
Self-rated readiness (1-5)	4.19 (4.0-4.54)	3.64 (3.43-3.78)	834.0	< 0 .001	0.85
Readiness to engage with families (1-5)	4.19 (3.92-4.4)	3.48 (3.22-3.71)	833.0	< 0.001	0.85

Note: Me is the median; Q1-Q3 is the interquartile range (25th and 75th percentiles); U is the Mann-Whitney statistic; P is the level of statistical significance; r is an effect size.

The hypothesis was confirmed on all three indicators, with a large effect size in each case. Year of study (third or fourth) made no significant difference on its own (Kruskal-Wallis, H = 0.001, P = 0.97), and neither did city (H = 0.406, P = 0.52): what matters is whether a student had completed the module, not their age or where they studied.

H2 predicted only a moderate match between self-rated readiness and objective knowledge. To test it, Spearman's rank correlation coefficients were calculated **(Table 4)**.

Table 4. Correlation of self-rated readiness and readiness to engage with families with objective knowledge.

Variable pair	ρ	P	n
Self-rated readiness — objective knowledge	0.641	< 0.001	60
Readiness to engage with families — objective knowledge	0.542	< 0.001	60

Note: ρ is the Spearman's rank correlation coefficient; P is the level of statistical significance.

The connection was substantial (ρ = 0.641), not moderate as expected, which was unexpected. That said, $R^2 \approx 0.41$ means the objective score explains only about 41% of the variability in self-ratings. Hence, the hypothesis was only partly confirmed: some students sense their own level, some do not, and without a test that difference is hard to see.

H3 predicted divergence between parents' priorities and students' readiness profile on individual areas. To test this, for each of the eight areas, we compared three values: the area's importance to students, its importance to parents, and parents' confidence in the teacher's readiness **(Table 5)**.

Table 5. Importance profiles for health-supporting environments: students and parents.

Area	Students, importance, Me	Parents, importance, Me	Parents confident in teacher, Me	χ^2	P
Nutrition fundamentals	4.29	4.56	4.16	16.09	0.0001
Routine and food environment	4.18	4.75	4.27	7.91	0.0049
Eating behavior	3.96	4.37	4.19	1.72	0.19 (N/A)
Picky eating	3.70	4.68	4.28	14.71	0.0001
Communication with parents	3.75	4.78	4.08	29.10	< 0.0001
Allergy	4.21	4.69	4.50	11.20	0.0008
Professional boundaries	3.90	4.34	3.91	26.70	< 0.0001
Awareness promotion	3.60	4.43	4.21	6.88	0.0087

Note: χ^2 is the chi-square goodness-of-fit statistic; P is the level of statistical significance.

The gap in individual areas jumps out from the table: the sharpest split between students and parents is in communication with parents (median difference of 1.03 points out of 5) and picky eating (0.98). Comparing the share of respondents rating a component as "very important" with the share confident that the teacher is "highly ready," the widest gaps were in professional boundaries and communication. The gap is statistically insignificant only for eating behavior. Spearman's correlation between the student importance profile and the parent profile was effectively zero (ρ = 0.095, P = 0.82). Among trained students (n = 30), the correlation with the parent profile also stayed weak and statistically insignificant (ρ = 0.143, P = 0.736).

Figure 1 shows the profiles on three measures (importance to students, importance to parents, and parents' confidence in the teacher) across eight areas as a grouped bar chart. The parents' importance bar tops both other measures in most areas. The gap is widest in communication with parents, picky eating, and professional boundaries.

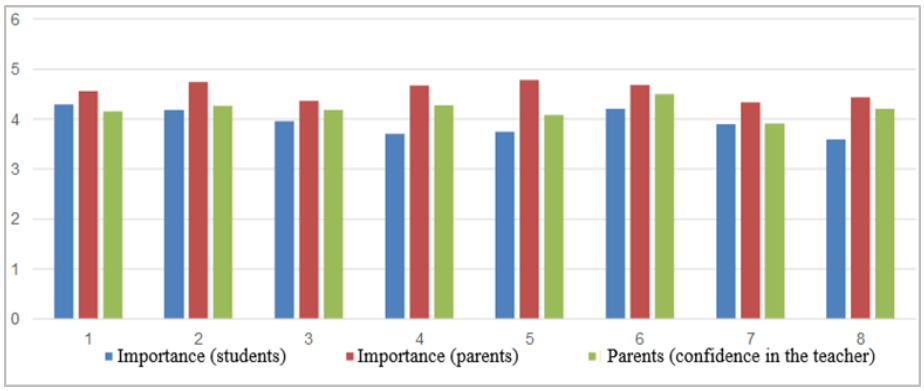

Figure 1. Importance profiles for areas of the health-supporting environment: students vs parents (median scores across eight areas). (1) Nutrition fundamentals, (2) Routine and food environment, (3) Eating behavior, (4) Picky eating, (5) Communication with parents, (6) Allergy, (7) Professional boundaries, and (8) Awareness promotion.

The one area where the three group profiles come close together is forming eating behavior, where the difference between importance and confidence in teacher readiness is statistically insignificant ($\chi^2 = 1.72$, $P = 0.19$).

Some parents' doubts about kindergarten nutrition in Kazakhstan have been noted before: UNICEF monitoring data show that some parents question the nutritional value of the food served in kindergartens [26]. Our data adds a specific dimension to that picture: it looks less like a matter of trust in the menu, and more like a sense that the teacher is ready to talk and explain why a sugary product is limited, and how to react when a child refuses food rather than follow the protocol.

H3 was confirmed, and the mismatch was sharper than we expected: the students' importance profile barely aligns with the parents' importance profile, even among trained students ($\rho = 0.143$). Specialist training improves knowledge (H1: $r = 0.73$-0.85), but it does not change what students actually see as priorities. In our view, this is the practice-oriented training gap we flagged when framing the problem: a student answers the test question on allergy or picky eating correctly but does not count the conversation with an anxious parent as central to the profession.

Parents see it differently. They rated communication with the teacher ($Me = 4.78$), routine and food environment (4.75), allergy (4.69), and support for picky eating (4.68), i.e., precisely the aspects where the gap with the students' profile was widest.

Year of study ($H = 0.001$, $P = 0.97$) and city ($H = 0.406$, $P = 0.52$) showed no significant differences on their own: it is not about age, years of study, or location; it is whether the specific module was taken.

The H2 results ran counter to expectations: the link was moderately strong ($\rho = 0.641$), with knowledge accounting for about 40% of the variability in self-rated readiness ($R^2 \approx 0.41$). In our view, that points to partial rather than systemic calibration of self-assessment. Some students sense their own level; a larger share does not. Without an objective test, neither the practice supervisor nor the student will spot that difference. The bias is asymmetric across the groups: among the trained, self-rating clearly outruns the objective knowledge ranking in 30% of students, against 13% with the reverse bias; among the untrained, undervaluation is more common (27% versus 20% who overrate). In other words, the module does not just increase average confidence; it nudges confidence toward overestimation, which matters if self-report is the only indicator of practice readiness [27].

The "eating behavior" area stands apart, possibly not because it is less important, but because it carries less emotional weight. It involves the everyday, procedural stuff of routine, trying new foods, and table manners. At the same time, the areas with the biggest gap (communication with parents, picky eating, professional boundaries) require less knowledge than the skill of holding someone else's anxiety or displeasure. A theoretical analysis of adolescents' social intelligence similarly emphasizes understanding the socioemotional context of interaction and adjusting one's behavior through self-reflection [28]. However, this reading needs a caveat. The claim that the profiles "come close together" rests on a single non-parametric test at $n = 60$, and a non-significant result at that sample size does not equal an absent gap: the median-score difference between parents' and students' importance in this area (0.41) is comparable to "nutrition fundamentals" (0.27-0.31), where the same comparison came out significant. We put this forward more as a hypothesis for a larger sample than as a finding in its own right.

Comparison with similar studies reveals a similar pattern in different contexts. In one study, teacher training raised knowledge by about 2 points out of 25 on average, but the effect on practice and on child outcomes was noticeably smaller than the knowledge gain [10]. Knowledge does not automatically translate into practice. A conceptual study of university music educators also stresses the need for psychological and pedagogical competence alongside professional expertise [29]. In another study, the biggest changes occurred in the area developed jointly with parents and health workers [14]. That result carries over here: the areas with the widest gap (communication, picky eating, awareness promotion) are exactly the topics where training benefits from being co-designed.

The gap between knowing (or prioritizing) and doing discussed in the introduction at the child and parent level [19, 23, 30] shows up in our study in a third group too (future teachers) before they have even started independent work. The practical consequence of the gap may play out in the first months on the job for a new teacher trained on protocol knowledge: they face a parent who came not for a fact about a sugar norm but for support in a specific, often emotionally loaded situation. Awareness promotion is the area students value least ($M = 3.63$), even though the program formally covers it.

The practical takeaway for the training program, backed by Kazakhstani research on parent-teacher communication, is straightforward: bulking up the theoretical block is not enough if the gap lies in communicative and emotionally loaded areas [31]. In engineering education, realistic professional tasks, collaborative projects, and analysis of one's own decisions are likewise proposed for developing professional thinking [32]. A logical next step would be to add situational tasks with feedback from practicing teachers (for example, a conversation with the parent of a child with an allergy, a response to a refusal to eat, an explanation for canceling an extra portion of a sweet) on exactly the areas where the gap turned out widest [33]. Whether the current curricula include such tasks is a separate question we did not assess. That calls for its own analysis of the preparation programs.

Limitations are as follows: the two-city sample does not represent Kazakhstan as a whole; the cross-sectional design does not prove that the module caused the knowledge gain rather than a selection of more motivated students. Students and parents completed the importance scales using role-tailored wording, which may have introduced systematic divergence. We should also note the limited power of the Spearman test used for H3: the correlation between students' and parents' importance profiles ($\rho = 0.095$) was calculated on just eight data points (one

averaged value per area, not 120 individual observations). The power of that comparison is inherently low, so treat the result and its non-significance as indicative rather than final.

Conclusion

Specialist training positively affects knowledge, self-rating, and subjective readiness for work with families. The connection between self-rating and objective knowledge was stronger than we expected, though not fully in line with our expectations: for some students, self-rating adequately reflects actual knowledge, while for others it diverges substantially.

Students and parents set priorities differently, and the gap shrinks least under specialist training in exactly the areas where parents expect the most attention: communication with the teacher, guidance for parents on food selectivity, and explaining restrictions. In other words, the program prepares students to answer test questions more than to engage with a specific parent about a specific child.

One practical conclusion follows: it makes sense to shift training emphasis from protocol knowledge to situational skills for talking with families. Later stages of the research should check whether this gap narrows after a targeted intervention and whether these results hold in non-state preschools and other regions.

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