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Availability, perceived need and satisfaction for school nurses in Spain: a cross-sectional study involving the school community

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Abstract

Background School nursing in Spain faces crucial challenges that require immediate attention. This is the first national study developed by the School Nursing Observatory Research Group of the General Council of Nursing (GCN) in Spain on the school nurse (SN) professional profile and their availability at schools. The objective is to understand the social-labor situation, as well as the availability, perceived need, and satisfaction of the school community with the SN, as well as the factors related to these variables.

Methods Cross-sectional study using three ad hoc designed and validated questionnaires through a digital platform. Participants included 376 SNs, 1193 teachers and school principals, and 582 mothers, fathers, and representatives of parents' associations (PAs). Descriptive and bivariate statistical analyses were conducted using SPSS v.28.

Results Most SNs work in a single school in exclusive, mainly employed by the education department or privately funded special education schools, in urban areas and schools with a high number of students. Both school staff and PAs perceive a high need of and satisfaction with SNs. According to school staff, SNs are more in private and subsidized schools and, according to PAs, in schools where a child has a disease. In schools where there are children with certain diseases, according to PAs, a greater need for a SN was perceived. And the schools staff also found SNs especially necessary in schools located in disadvantage areas.

Conclusions Despite the high level of satisfaction with the role of the school nurse, structural deficiencies remain in its implementation and territorial distribution within the Spanish educational system. These limitations hinder compliance with international quality standards, such as the nurse-to-student ratios recommended by the WHO and other European countries. It is essential to increase the allocation of school nursing professionals, particularly those working on an exclusive, full-time basis, with priority given to rural settings, publicly funded schools, and socioeconomically disadvantaged areas. Strengthening this resource would help reduce health inequities among children and adolescents, address the needs identified by the educational community, and contribute to the

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achievement of the Sustainable Development Goals (SDGs), particularly those related to health, equity, and quality education.

Keywords School nursing, School nurse, Health education, Health promotion, School health, Public health, Health services research

Introduction

We have an increasing school population in need of care and support. According to the WHO/Europe Reports (2024), based on data from 44 European countries participating in the “Health Behaviour in School-aged Children (HBSC)” study, including Spain, unhealthy eating habits, increasing rates of overweight and obesity, and low levels of physical activity are reported among schoolchildren and adolescents [1]. Additionally, there is a noted decrease in the use of effective contraceptive methods [2] and a decrease in average life satisfaction, which also declines with age [3]. Rising issues related to the problematic use of social media [4] and the risk of peer violence, including fighting, bullying, and cyberbullying, are also emphasized [5]. These factors collectively increase the risk of various non-communicable and communicable diseases, including cardiovascular diseases, diabetes, cancer, sexually transmitted infections, addictions, and mental illnesses and disorders. The availability of nurses in schools is crucial to ensure the health and well-being of students. In a study that encompassed 30 European countries, nearly all participating countries had School Health Services (SHS); however, significant variations exist in terms of governance, organization, content, and comprehensiveness (with Spain and the Czech Republic notably lacking SHS). Furthermore, the majority of countries reported a shortage of healthcare professionals (including nurses, doctors, psychologists, social workers, and dentists) who, in many cases, had not been trained in the area of school health. The study concluded that overall, many EU countries require enhanced administrative and legal support, the recruitment and training of additional school health professionals, and adaptations to address the evolving health priorities of students [6]. Globally, the role of the school nurse (SN) is well-established and is a fundamental component in schools [7–9], they share the common denominator of operating within the educational, highlighting their versatile role in planning, executing, and evaluating health education activities [10–12], and emphasizing their capacity to promote the physical, emotional, and social well-being of students, as well as their positive influence on the school [13–16]. In the context of health education, the implementation and evaluation of programs with specific indicators in schools is fundamental to promoting healthy lifestyles and preventing illnesses among students. Specifically, at the European level, recent studies underline the relevance of the tasks carried out by School Health Services (SHS)

[9], considering both the cost and effectiveness of these services, as well as the results regarding their importance for prevention and health promotion in the school population [17, 18]. In these same studies, the importance of the different figures that are part of the SHS is described, among which the SN is highlighted [19, 20]. These services are particularly essential in areas of special protection in developed countries, called disadvantaged areas, to address their special needs. In fact, introducing school nursing services is of vital importance in combating the social determinants of health and supporting the development of the 2030 agenda and the Sustainable Development Goals (SDGs) [21–24]. From a geographical and administrative perspective, Spain is divided into autonomous communities (CCAA), which have autonomy in developing competencies in health, education, and other areas [25, 26]. Each autonomous community manages its territory and programs independently, and its policies may vary according to local needs and characteristics. There is no single national model, with several intervention models coexisting for nurses in the school environment, according to the guidelines of the Autonomous Community Departments, and also according to the funding model of the schools, whether public or private. Thus, the nurse may work full-time in a single school, especially in private schools, in multiple schools, or in some geographical contexts, the school nurse may not be present. However, it is worth noting that the role of the school nurse has been gaining prominence in recent decades [27].

Therefore, the current situation of SNs is considered a matter of vital importance that deserves careful analysis, as to date, there is no national-level study that has examined the situation of SNs regarding social-labor and organizational aspects, their availability at schools, and the necessity and satisfaction perceived with this figure by school staff [28] and of student parent’s associations (PAs). Thus, this is the first national study on the figure of the SN in Spain, aiming to understand the social-labor situation, as well as the perceived need and satisfaction with this figure by the school community. Obtaining accurate and detailed information will allow identifying areas of strength and weakness, proposing improvements, and developing strategies that contribute to optimizing the work of SN and ultimately improving the quality of care and the well-being of students.

The objective is to understand the social-labor situation, as well as the availability, perceived need, and

satisfaction of the school community with the SN, as well as the factors related to these variables.

Considering the key role that school nurses play in provision of health care, addressing both the immediate health needs and long-term health problems of students. Their role is vital not only in providing immediate care, but also in preventing health problems, improving academic performance and reducing mental health problems among schoolchildren. In schools, especially those with students from disadvantaged areas, the presence of school nurses might be crucial to reducing health disparities and ensuring equal access to care for all students.

Methods

This study has been designed and conducted by the Research Group of the National Observatory of School Nursing of the General Council of Nursing (GCN) in Spain. This group is composed of experts in school nursing with profiles such as SNs and pediatric nurse specialists with extensive work and research experience in school settings, as well as university teaching and research staff in nursing and school health, with extensive experience in teaching and research. In turn, this group is part of the Spanish Institute of Nursing Research (INR) of the GNC, in which various professionals in the field of school nursing with extensive experience in nursing management also participate. It is a descriptive cross-sectional national study was conducted during the 2022–2023 school year in Spain. For the population of SNs, the study is framed within a context of 11,513 educational centers (Ministry of Education) and a reference population of 2,225 School Nurses (SNs) (National School Nursing Observatory, 2023). SNs were selected to ensure the inclusion of diverse geographical regions and educational environments in Spain. Inclusion criteria were being a SN with at least one year of professional experience and working in non-university centers, i.e., schools with primary or secondary cycles and/or special education.

Similarly, non-university teacher staff and representatives of parent, mother, and/or called PAs (Parent's Association is a voluntary, non-profit organization formed by the parents and guardians of students at an educational institution) were selected, using the number of non-university centers (special education schools, primary schools, and secondary schools, both public and private, located in rural or urban areas) in Spain throughout the national territory as a reference, according to the Ministry of Education's registry for each autonomous community during the 2022–2023 school year. Participating schools were randomly chosen.

Finally, the study involved 376 SNs working in the school health field nationwide, 1194 staff members from

schools, and 582 mothers, fathers, and representatives of PAs (Fig. 1).

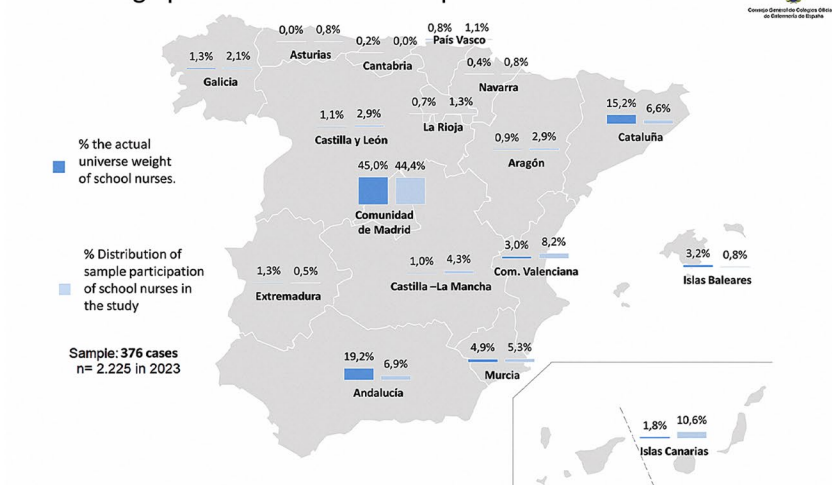
Variables and instruments

Three ad hoc questionnaires were developed, tailored to the profiles of the different participant groups, and designed by the research team. Face validity was initially assessed through focus groups and semi-structured interviews with professionals from the educational and healthcare fields. A preliminary version of the instruments was then subjected to content validation by a panel of experts in school health, education, and research methodology. The experts' feedback was incorporated to enhance item clarity, relevance, and appropriateness.

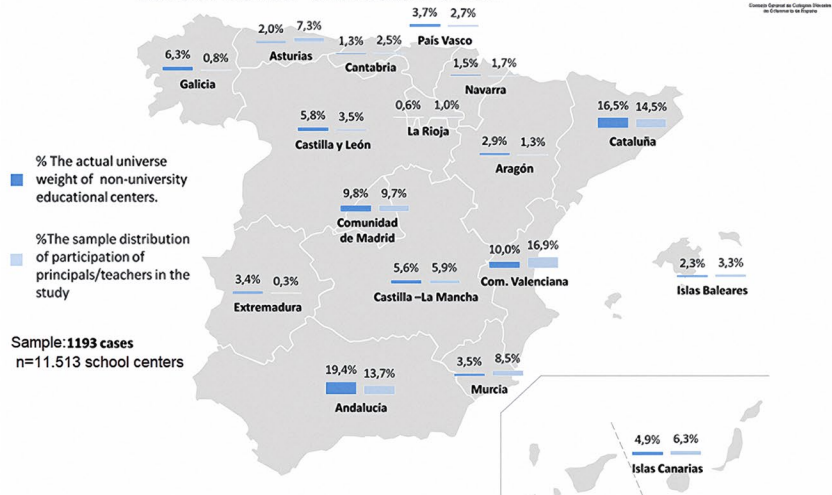
In addition, a pilot test was conducted with a small sample of participants with characteristics similar to the target population, in order to evaluate the comprehension, internal consistency, and feasibility of the questionnaires. Minor adjustments were made based on the results before proceeding to the final implementation of the study. For greater clarity, a bullet-point summary of the main evaluated aspects is provided in the supplementary material.

The questionnaires aimed at school staff and PAs included socio-demographic variables: age, gender (female, male, and non-binary), position of the person interviewed in schools (school director/responsible, head of studies, teacher, secretary, vice-director) and PAs (father, mother, PA representative); variables related to the characteristics of the workplace and its location: type of school (Preschool and/or Primary Education School, Preschool, Primary, and Secondary Education School, Secondary and/or High School, Special Education school, Various types of schools grouping the previously mentioned ones), type of funding (Subsidized, private, public), location based on the population size (rural or urban), the number of students (≤ 500 , between 501 and 1499, ≥ 1500), and whether it was located in a disadvantaged areas (yes or no). They were also asked about the need for the implementation of health training programs for teachers (yes or no) and the satisfaction level with the SN using a Likert scale (1 very dissatisfied, 2 dissatisfied, 3 neither satisfied nor dissatisfied, 4 satisfied, and 5 very satisfied), in case there was a SN at the school. Lastly, as the main analysis axis, variables about the availability or not of a SN at the school were also included (yes or no), the level of perceived need for the SN, also measured with a Likert scale (1 not necessary at all, 2 slightly necessary, 3 neither necessary nor unnecessary, 4 necessary, 5 very necessary). Finally, representatives of PAs were also asked about the existence of children with illness at the school.

Sociodemographic Characterization of Spanish Nurses



School Center characterization



Characterization of the School Center (AMPA)

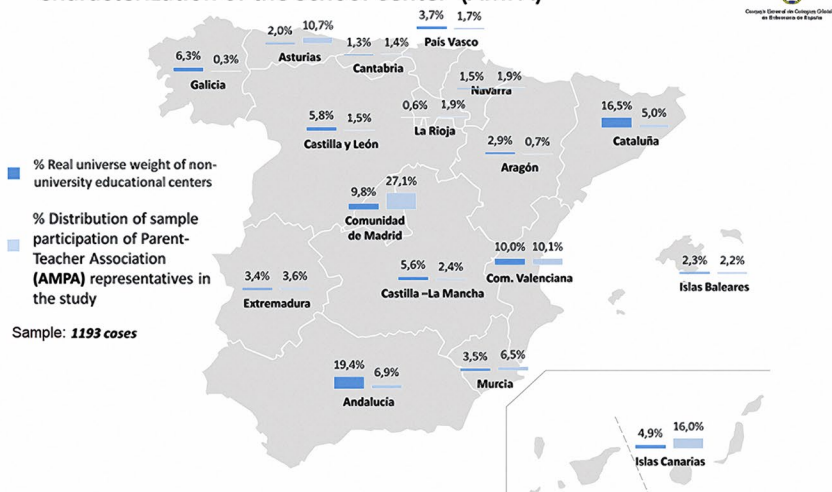


Fig. 1 Geographical distribution of the sample of school nurses, school stall, and representatives of mothers and fathers that participated in the Spanish study in contrast with the sample universe

Data collection

Data collection was conducted online through the GCN via contacts with SNs and school nursing associations at the national level (Spanish Scientific Association of School Nursing and Health ACEESE, and the National and International School Nursing Association AMECE). Dissemination was carried out through the communication and dissemination channels of the GCN.

Likewise, the three surveys were disseminated via email to public, private, and subsidized non-university centers, as well as special education schools, through the directors and PAs of each school.

The data collection period was from March 31 to June 23, 2023. The questionnaires were sent in self-administered digital format through a web platform, with an average completion time of 20 min.

Statistical analysis

A descriptive analysis was conducted through the calculation of frequencies and percentages, as well as measures of central tendency (Mean and Standard Deviation [SD]). Specifically, the variables of satisfaction level and perceived need were quantitatively analyzed by calculating the means and standard deviations.

To compare between more than two independent groups, analysis of variance (ANOVA) or chi-square tests were applied depending on the nature of the variables. We analyzed the Likert-type item (five response options symmetrically anchored around a neutral choice) using one-way ANOVA, treating the single item as an interval-level approximation. This decision is supported by evidence in the health sciences literature showing that parametric tests (t/ANOVA) are robust to violations of normality and to the ordinal nature of Likert-type responses, particularly with large samples [29, 30].

Additionally, to assess the association between variables, the Pearson correlation coefficient was used.

All statistical analysis was conducted using SPSS software version 28. A statistical significance threshold of $p < 0.05$ was established.

Ethical approval and consent to participate

The study was approved by the Ethics Committee of the Príncipe de Asturias University Hospital in Spain (CEIm Code: OE 18/2023) on April 26, 2023. All procedures involving human participants were conducted in strict accordance with relevant ethical guidelines and regulations. Informed consent was obtained from all participants prior to their involvement in the study.

Results

The social-labor characteristics of the participating SNs based on the care model they provide in the schools where they work are shown in Table 1.

Overall, the exclusive model was the most common situation (45.8%), followed by the SN attending occasionally school (32.8%), and finally the itinerant model (21.4%). Most SNs were women (92.8%), with a mean age of 41.3 (SD = 8.92) years. No significant differences were observed in gender distribution or age across different contractual situations.

Regarding the hiring organization characteristics of SNs, the Education Department (92.7%), the school itself (98.4%), and private companies (95.5%) predominate in the exclusive model compared to the other models, with the Health Department being the institution that most frequently contracts in the itinerant models (44.2%) and for nurses who attend occasionally (36.4%) ($p < 0.001$). In relation to the characteristics of schools, SNs in the exclusive model were distributed across different types of schools, with a notable presence in Schools of Infant, Primary, and Secondary Education (89.0%), with Special Education (91.0%) and Schools of Infant and/or Primary Education (78.2%), and to a lesser extent in Institutes of Secondary Education and/or Baccalaureate (59.9%). However, in itinerant models (57.1%) and in cases of occasional attendance (42.9%), a higher percentage of SNs were situated in various types of schools grouping schools of different characteristics ($p < 0.001$).

Likewise, concerning the type of funding of the school, most SNs worked in publicly funded schools although this hiring was the more reported by nurses from itinerant models (19.7%) and in cases of occasional attendance (14.5%), while in the exclusive model the more frequent were private (92.3%) or subsidized (93.2%) ($p < 0.001$).

Most SNs stated they were present in schools in urban areas (exclusive model 78.9%), with a higher percentage of schools in rural than in urban areas for itinerant models (20.8%) and in cases where the nurse attends occasionally (18.9%) ($p = 0.011$).

Regarding the number of students in the schools, no significant differences were observed. Most SNs in the exclusive model (79.2%) and itinerant models (15.1%) worked in schools with fewer than 500 students, and in the case of occasional attendance model (17.2%) in schools with more than 1.500 students.

Proportionately, fewer nurses working in exclusive models were in disadvantaged areas (53.3%) ($p < 0.001$).

In Table 2, the characteristics of schools reported by the school personnel are shown based on the availability or not of a SN in the school according to the responses of the school staff. Out of 1194 participants, 65.2% are women, the mean age of the respondents is 50.5 years old, 78.2% are directors or responsible for the school, and 55% ($n = 320$) affirmed having a SN in their school. Within the schools that have a nurse, 45.5% ($n = 124$) affirmed that the nurse was in the schools according to

Table 1 Social-labor characteristics of school nurses (SNs) based on the model of care developed in the school, according to the responses of the SNs. ($N = 376$)

Variables / Contractual Situación ($N = 376$)	Exclusive model ($n = 287$)	Itinerant model ($n = 51$)	Attends occasionally ($n = 38$)	p^*
<i>Variables related to the SN.</i>				
Gender ($m = 0$)				0.085
Female	272 (78.8%)	48 (13.6%)	34 (9.6%)	
Male	15 (75.0%)	2 (10.0%)	3 (15.0%)	
Non-binary	0 (0.0%)	1 (50.0%)	1 (15.0%)	
Age, mean (SD)	40.15 (± 3.5)	41.55 (± 4.0)	42.24 (± 3.8)	0.304
Entity from which their service/employment depends ($m = 0$)				< 0.001
School	60 (98.4%)	0 (0.0%)	1 (1.6%)	
Education Department	139 (92.7%)	6 (4.0%)	5 (3.3%)	
Health Department	15 (19.5%)	34 (44.2%)	28 (36.4%)	
Others	9 (42.9%)	10 (47.6%)	2 (9.5%)	
Thorough a private company	64 (95.5%)	1 (1.5%)	2 (3.0%)	
Work schedule mode ($m = 10$)				0.054
Full-time	225 (76.0%)	47 (15.9%)	24 (8.1%)	
Part-time	58 (82.9%)	4 (5.7%)	8 (11.4%)	
<i>Variables related to the school</i>				
Type of school ($m = 0$)				< 0.001
School of Infant and/or Primary Education	86 (78.2%)	16 (14.5%)	8 (7.6%)	
Institute of Secondary Education and/or Baccalaureate	11 (57.9%)	2 (10.5%)	9 (6.2%)	
School of Infant, Primary, and Secondary Education	129 (89.0%)	7 (4.8%)	9 (6.2%)	
Special Education school	61 (91.0%)	6 (9.0%)	0 (0.0%)	
Various types of schools	0 (0.0%)	20 (57.1%)	15 (42.9%)	
Type of funding ($m = 0$)				< 0.001
Subsidized	96 (92.3%)	5 (4.8%)	3 (2.9%)	
Private	41 (93.2%)	1 (2.3%)	2 (4.5%)	
Public	150 (65.8%)	45 (19.7%)	33 (14.5%)	
Location ($m = 0$)				0.011
Rural	32 (60.4%)	11 (20.8%)	10 (18.9%)	
Urban	255 (78.9%)	40 (12.4%)	28 (8.7%)	
Number of students in the school ($m = 0$)				0.096
≤ 500	126 (79.2%)	24 (15.1%)	9 (5.7%)	
501–1499	111 (76.6%)	19 (13.1%)	15 (10.3%)	
≥ 1500	47 (73.4%)	6 (9.4%)	11 (17.2%)	
School located in a disadvantaged area ($m = 50$)				< 0.001
Yes	32 (53.3%)	16 (26.7%)	12 (20.0%)	
No	216 (81.2%)	29 (10.9%)	21 (7.9%)	

m: missing values

*Chi Square Test was performed for comparisons

the exclusive model, 21.4% ($n = 56$) itinerant, and 32.8% ($n = 89$) attended occasionally the school.

One of the characteristics of the school associated significantly with the availability of a SN, according to the responses of the school staff, was the type of school. Participants from special education schools more frequently affirmed having a SN (62.2%), while schools of Primary and Secondary School have less availability of SN (23.1%) ($p < 0.001$), despite the latter being the highest percentage of participating schools. Regarding funding, although most participating schools were public, there was a higher availability of SNs in private schools (80%, $p < 0.001$). The location of the school was also related to the availability of a SN ($p < 0.001$). Thus, schools located

in urban areas had a higher availability of SNs (29.6%) compared to rural schools (19.3%) ($p < 0.001$). Regarding the number of students, the availability of a SN was higher in schools with ≥ 1500 students (56.2%, $p < 0.001$). Finally, there were no significant differences regarding the availability of a SN according to the school location in a disadvantaged area or not, and regarding the perceived need for the establishment of health training programs for teachers, which was considered necessary by the majority (96.4%).

In Table 3, the responses of the participants representing the PAs are shown based on the availability of a SN. Out of 582 participants, 91% are women, with an average age of 43.9 years. About 74.8% are representatives of the

Table 2 Participant characteristics of schools reported by school staff ($N = 1194$) according to the availability of a school nurse (SN) in the school

		Availability of SN ($N = 1194$)		P*
		Yes	No	
Type of school ($N = 1181$)	Nursery School	1 (0.3%)	2 (0.2%)	< 0.001
	Primary and Secondary School	178 (56.3%)	594 (68.7%)	
	Primary School	4 (1.3%)	9 (1%)	
	Secondary School and High School	58 (18.4%)	161 (18.6%)	
	Nursery, Primary, and Secondary School	43 (13.6%)	80 (9.3%)	
	Special Education school	32 (10.1%)	19 (2.2%)	
Type of Funding ($N = 1194$)	Public	263 (81.4%)	779 (89.4%)	< 0.001
	Subsidized	56 (17.3%)	91 (10.5%)	
	Private	4 (1.2%)	1 (0.1%)	
Location ($N = 1194$)	Rural	57 (17.7%)	239 (27.4%)	< 0.001
	Urban	266 (82.4%)	632 (72.6%)	
Number of Students in the school ($N = 1191$)	< 500	211 (65.5%)	635 (73.1%)	< 0.001
	Between 501 y 1499	75 (23.3%)	206 (23.7%)	
	≥ 1500	36 (11.2%)	28 (3.2%)	
School located in a disadvantaged area ($N = 1106$)	YES	88 (29.4%)	261 (32.3%)	0.197
	No	211 (70.6%)	546 (67.7%)	
¿Do you consider it necessary to establish health training programs aimed at teachers? ($N = 1194$)	YES	313 (96.9%)	834 (95.8%)	0.233
	No	10 (3.1%)	37 (4.2%)	

*Chi Square Test was performed for comparisons

PAs. Among them, 40.2% ($n = 234$) stated that there is a SN available in the school. Furthermore, 63.8% ($n = 141$) mentioned that the SN was available at the school in exclusivity, 23.1% ($n = 51$) stated that the nurse worked itinerantly across multiple schools, and 13.1% ($n = 29$) mentioned that the nurse attended occasionally.

A significant difference was observed ($p = 0.002$) in the availability of a SN based on the response of parents about the existence of children with a disease at the school (51.4% yes vs. 36.7% no). This availability also varied according to the type of school ($p < 0.001$), as participants from special education schools were more likely to have a SN (85%) despite most participating schools being primary schools. Regarding the location of the school, those located in urban areas had a higher availability of SNs (44%) ($p < 0.001$).

In relation to the number of students, the availability of a SN was higher in institutions with ≥ 1500 students (73.5%, $p < 0.001$). However, no significant differences were observed in the availability of a SN based on the type of funding of the school, its location in a disadvantaged area or not, and in relation to the perceived need for the implementation of health training programs directed at teachers, which was considered mostly necessary (99%).

In Table 4, the perceived need for a SN by the school staff and PAs (Parent Associations) representatives is presented based on reported characteristics of the schools.

For the school staff, the perceived need for the SN was averaged at 4.58 ($SD = 0.73$). In this group, the variables associated with the perceived need were the location, with a higher perceived need in schools located in urban areas (4.64, $SD = 0.66$) compared to rural areas (4.40, $SD = 0.88$) ($p < 0.001$), in schools located in disadvantaged areas (4.67, $SD = 0.66$) compared to those that did not (4.55, $SD = 0.74$) ($p = 0.013$), if they had a SN available (4.81, $SD = 0.42$ vs. 4.50, $SD = 0.80$), if they operated under the exclusivity model (4.90, $SD = 0.31$) versus the model where the nurse attends occasionally (4.66, $SD = 0.54$) ($p < 0.001$), and if they considered teacher's healthcare training necessary (4.60, $SD = 0.71$ vs. 4.26, $SD = 1.05$).

For the PAs group, the perceived need for the SN was averaged at 4.57 ($SD = 0.76$). In this group, the variables associated with the perceived need were the role, with a higher perceived need among parents (4.76, $SD = 0.54$) compared to PA representatives (4.46, $SD = 0.86$), and the existence of children with illness in the school (4.73, $SD = 0.76$ vs. 4.52, $SD = 0.75$). Additionally, the location showed a higher perceived need in urban schools (4.65, $SD = 0.68$) compared to rural areas (4.33, $SD = 0.93$) ($p < 0.001$). The perceived need was also higher in larger schools (4.88, $SD = 0.33$) compared to smaller ones (4.47, $SD = 0.81$) ($p = 0.003$), among those with a SN available (4.82, $SD = 0.49$ vs. 4.41, $SD = 0.86$), and those operating under the exclusivity model (4.94, $SD = 0.25$) versus the itinerant model (4.65, $SD = 0.80$) ($p < 0.001$). Moreover, those who considered teacher healthcare

Table 3 Participant characteristics of schools reported by PAs (parent's associations) representatives ($N=582$) according to the availability of a school nurse (SN) in the schools

		Availability of SN		Row-total	P*
		Yes	No		
Children in the school with some illness	YES	71 (51.4%)	67 (48.6%)	138	0.002
	No	163 (36.7%)	281 (63.3%)	444	
Type of school	Nursery School	2 (50%)	2 (50%)	4	0.002
	Kindergarten and Primary School	119 (40.5%)	175 (59.5%)	294	
	Primary School	9 (30.0%)	21 (70.0%)	30	
	Secondary School and High School	69 (37.7%)	114 (62.3%)	183	
	Kindergarten, Primary, and Secondary School	16 (39.0%)	25 (61.0%)	41	
	Special Education schools	17 (85.0%)	3 (15.0%)	20	
	Public	216 (39.8%)	327 (60.2%)	543	
Type of funding	Subsidized	17 (44.7%)	21 (55.3%)	38	0.396
	Private	1 (100%)	0 (0%)	1	
	Rural	40 (28.4.1%)	101 (29.0%)	141	
Location	Urban	194 (44.0%)	247 (56.0%)	441	<0.001
	Number of students in the school				
	< 500	105 (34.4%)	200 (65.6%)	305	<0.001
	Entre 501 y 1499	70 (36.1%)	124 (63.9%)	194	
	≥ 1500	25 (73.5%)	9 (26.5%)	34	
School located in a disadvantage area.	YES	23 (30.3%)	53 (69.7%)	76	0.104
	No	163 (40.1%)	243 (59.9%)	406	
Do you consider it necessary to train teachers in health education?	YES	232 (40.3%)	344 (59.7%)	576	0.730
	No	2 (33.3%)	4 (66.7%)	6	

*Chi Square Test was performed for comparisons

training necessary reported a higher perceived need (4.59, $SD=0.71$) compared to those who did not (2.50, $SD=1.76$).

Finally, it is worth mentioning that the satisfaction level with the SN, reported by participants who had a SN available at the school, was 4.44 ($SD=0.93$) for the school staff and 4.32 ($SD=0.89$) for the PAs. Furthermore, a positive Pearson correlation was observed between the perceived need for the SN and the satisfaction level with the SN in both groups (school staff $r=0.171$, $p=0.002$; PAs $r=0.310$, $p<0.001$).

Discussion

This study provides insights into the situation of SNs in Spain based on responses from SNs, school staff, and parents from PAs. The study characterizes this situation through social-labor variables according to the model of care present in the schools, as well as indicating the availability and perceived need according to the characteristics of the schools. Finally, the satisfaction of school staff and parents with this figure is presented. Both the perceived need and satisfaction levels are reported to be very high.

The most prevalent model of care is the exclusive model, which aligns with the internationally recognized role of the SN and advocated by most scientific associations. In this model, the nurse attends to the school community in a single school. However, according to the responses from school staff and parents, the SN is available in less than half of the participating schools (school staff reported 27%, PA representatives 40%) in Spain, a figure lower than that found in other countries. This reflects the need to continue increasing school nursing services in schools, advocating for a greater presence of the exclusive model.

Coordination between institutions remains inconsistent across the 17 Spanish autonomous community models, which prevented differentiated analysis by region.

In the school staff, the perceived need for a School Nurse (SN) was also related to the school's location in disadvantaged areas, a finding that likely reflects both the higher objective health needs in these communities and the resulting concern of staff to provide better services to their students. Most of participants considered it necessary to implement health training programs for teachers, with the perceived need also being higher among those

Table 4 Perceived need for school nurse (SN) by school staff and PA (parent's associations) representatives according to reported characteristics of schools

School Staff				PAs			
		Anova				Anova	
School staff (n=1194)	Perceived need for SN	F	p	PAs (n=582)	Perceived need for SN	F	p
Gender (n=1194)		0.4	0.67	Gender (n=582)		2.26	0.105
Male	4.60 (0.64)			Male	4.38 (0.91)		
Female	4.57 (0.77)			Female	4.60 (0.74)		
Non-binary	4.33 (0.58)			Non-binary	4.50 (0.71)		
Person's role (n=1194)		1.35	0.251	Person's role (n=582)		9.63	<0.001
Principal/Head of school	4.57 (0.71)			Father	4.76 (0.54)		
Head of Studies	4.58 (0.90)			Mother	4.73 (0.56)		
					4.46 (0.86)		
Teacher	4.67 (0.64)			PA Representative			
Secretary	4.42 (0.96)						
Vice Principal	4.75 (0.50)						
				Children at the school with any illness (n=582)		8.11	0.005
				Yes			
				No	4.73 (0.76)		
					4.52 (0.75)		
Type of school (n=1194)		1.62	0.152	Type of school (n=581)		1.45	0.205
Preschool	5.00 (0.00)			Preschool	4.75 (0.50)		
Primary and Preschool	4.59 (0.72)			Primary and Preschool	4.58 (0.76)		
Primary School	4.77 (0.44)			Primary School	4.53 (0.94)		
Secondary and High School	4.58 (0.73)			Secondary and High School	4.54 (0.81)		
				Primary, Secondary, and High School	4.51 (0.55)		
				Special Education school	5.00 (0.00)		
Type of Funding (n=1193)		2.72	0.066	Type of Funding (n=582)		0.2	0.819
Public	4.60 (0.71)			Public	4.57 (0.77)		
Subsidized/Private	4.46 (0.83)			Subsidized/Private	4.61 (0.55)		
Private	4.40 (0.89)			Private	5.00 (0.00)		
Location (n=1194)		26.46	<0.001	Location (n=581)		19.01	<0.001
Rural	4.40 (0.88)			Rural	4.33 (0.93)		
Urban	4.64 (0.66)			Urban	4.65 (0.68)		
Number of students in the school (n=1191)		0.59	0.554	Number of students in the school (n=532)		6.01	0.003
<500				<500			
Entre 501 y 1499	4.57 (0.73)			Entre 501 y 1499	4.47 (0.81)		
≥ 1500	4.60 (0.72)			≥ 1500	4.63 (0.76)		
	4.66 (0.72)				4.88 (0.33)		
School located in a disadvantaged area (n=1106)		6.25	0.013	School located in a disadvantaged area (n=582)		2.85	0.092
YES				SI			
No	4.67 (0.66)			No	4.70 (0.59)		
	4.55 (0.74)				4.53 (0.82)		
Service delivery model (n=271)		8.6	<0.001	Service delivery model (n=220)		9.37	<0.001
Exclusive model	4.90 (0.31)			Exclusive model	4.94 (0.25)		
Itinerant model	4.86 (0.40)			Itinerant model	4.65 (0.80)		
Attends it occasionally	4.66 (0.54)			Attends it occasionally	4.66 (0.55)		
Is there a SN in your school (n=1193)		46.74	<0.001	Is there a SN in your (n=581)		45.11	<0.001
YES				YES			
No	4.81 (0.42)			No	4.82 (0.49)		
	4.50 (0.80)				4.41 (0.86)		

Table 4 (continued)

School Staff				PAs			
		Anova				Anova	
School staff (n=1194)	Perceived need for SN	F	p	PAs (n=582)	Perceived need for SN	F	p
Do you consider it necessary to train teachers in health education?		9.93	0.002	Do you consider it necessary to train teachers in health education?		48.95	< 0.001
(n=1194)				(n=582)			
Yes				YES			
No	4.60 (0.71)			No			
	4.26 (1.05)				4.59 (0.71)		
					2.50 (1.76)		

who responded affirmatively to this question [9, 31]. A study performed in Norway highlighted the importance of establishing structured collaboration between nursing staff and school personnel [32]. Although understanding collaboration was not the focus of the present study, developing the named health training programs for teachers could be a key area for interdisciplinary collaboration. Another relevant focus could be the identification of health issues that influence students' academic outcomes, such as absenteeism or poor academic performance. From a multidisciplinary perspective, previous studies have shown that school nurses can work collaboratively with teachers, families, and other school stakeholders to promote better health and support the academic development of children [33, 34].

Finally, it is worth noting that perceived need was also related to satisfaction, especially among participants belonging to PAs. Overall, both the high satisfaction and the perceived need reflect the benefits that this figure brings to the school community, for healthcare, prevention, and health education activities [35].

Limitations and strengths

The main limitation of this type of cross-sectional study is its inability to establish causal inferences. Additionally, questionnaire-based surveys may be prone to recall bias if respondents do not accurately remember the data when completing them. Other limitation to consider is the representativeness of the sample. Although efforts were made to distribute the questionnaire proportionally among different types of schools (public and private) to reflect their national distribution, a lower response rate was observed from public schools. This differential non-response may have introduced a selection bias, leading to an underrepresentation of public schools in the final sample. Consequently, the findings might be more reflective of the reality in other organizations, such as subsidized and private schools, and the generalizability of the results to the entire educational system should be approached with caution. Moreover, online surveys have

the limitation that certain profiles, with a higher interest in research, may be overrepresented. However, online surveys also offer advantages such as lower cost, ease of use, simplification of fieldwork logistics, and the ability to reach population segments that are difficult to locate nationwide through personal and telephone surveys. The main strength of the study lies in its national scope, being conducted by a team of nursing experts in school health from across the country, with participation proportional to the geography of the school community in Spain. A limitation of this study is the inability to guarantee the complete independence of observations. The survey's distribution method did not allow us to control for the possibility of multiple individuals from the same school responding, which could violate the assumption of independence for certain statistical tests. Responses from participants within the same institution may be correlated, introducing a potential source of bias. Therefore, we have framed our results around the 'characteristics of the participants' rather than the schools. Nevertheless, caution is recommended when interpreting the results due to this limitation. Finally, treating a single Likert-type item as an interval-level approximation is debated; although this approach is commonly considered robust with large samples, results using this approach should be interpreted with caution given the ordinal nature of the response scale [36].

Conclusions

The results of this study provide a detailed overview of the situation of SNs at a national level, addressing demographic aspects, employment, and school environments. These data are essential to inform policies and practices related to school nursing.

Three main working models for SNs are identified, each with its specific characteristics: the exclusivity model where the SN performs duties in a single school permanently, the itinerant model where the nurse attends various schools to provide care, and the model where the nurse attends occasionally at the request of the school.

Although the exclusivity model is the most prevalent, it is only available in half of the cases. Contractual variations indicate areas where policies can be adjusted to ensure equity and guarantee the services provided.

Only half of the participating Spanish schools have a SN, despite the perceived need and high satisfaction with this professional figure. Various factors are associated with availability and perceived need, reflecting a greater availability for students with higher socioeconomic status and the consequent health inequity. Additionally, availability and perceived need are related to the existence of a child with an illness at school.

Finally, there is a need for teachers to be trained in health issues, with perceived needs of the school community who recognize this need.

This study highlights the strong perceived need and satisfaction with SNs, reinforcing their importance for equity and well-being in the school community.

We believe that the findings of this study are essential for understanding the diversity of contexts in which SNs operate and identifying key areas that may require attention and adaptation in current policies and practices.

In future research, it would be of interest to investigate nursing records addressing the various care actions, and the confidentiality and type of record that SNs maintain for student health data. Likewise, it would be advisable to further analyze the interventions carried out by nurses in school settings, as well as cost-effectiveness studies of such interventions. This could help to establish the competency profile for SNs in Spain.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12912-025-03970-5>.

Supplementary Material 1
Supplementary Material 2
Supplementary Material 3
Supplementary Material 4

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Author contributions

Zafra-Agea JA, Domingo Pérez T, Lima-Serrano M, Vargas-Martínez AM, Soler-Pardo E, Torralbas-Ortega J, Hoyos Cillero I participated in conceptualization, investigation, writing, and intellectual review of the manuscript. Zafra-Agea JA, Domingo Pérez T, Lima-Serrano M, Vargas-Martínez AM, Hoyos Cillero I, writing of the original draft methodology, formal analysis. Zafra-Agea JA, Domingo Pérez T, Lima-Serrano M, Torralbas-Ortega J, Hoyos Cillero I writing-revision. Data retention belongs to the General Council of Nursing Spain. All authors have read and agreed to the final version of the manuscript.

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Data availability

The raw data generated and analyzed during this study are the property of the Spanish General Nursing Council and form part of the study 'Analysis of the perceived need for school nurses in educational centers, both by teachers, parents, and the nurses themselves who cover this role'. The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethical approval

The study was approved by the Ethics Committee of the Príncipe de Asturias University Hospital (CEIm Code: OE 18/2023) Spain. Informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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