

The nurses' uniform in pediatrics, the opinion of children and nurses

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Abstract. *Background and aim:* The nursing uniform represents a non-verbal mean of communication which in the case of children can arouse positive or negative emotions. The first study conducted on a sample of 107 children, aimed to define their preferences on different models of decorated nursing uniforms; the second one conducted on 101 nurses to understand the preferences, the meanings attributed to the uniform and their availability to adapt it according to the preferences expressed by the children. *Methods:* We conducted an observational study with a qualitative approach. For the first objective with the children, a visual stimulus was used, showing 6 models of uniform: the traditional plus 5 models of different colors and themes (cartoons characters and videogames). For the second objective with the nurses, in addition to reproducing the same visual stimulus, a semi-structured questionnaire was used. *Results:* Children and nurses seem to be in perfect accord, because in both groups, color models were the most chosen. Nurses defined their uniform with terms of particular moral, intellectual and professional value and declared themselves available to align with the preferences of the children. *Conclusions:* This study leaves little doubt about preferences; it also represents the true originality of the study because almost never in the literature have been compared the point of views of children and professionals, generally favoring the comparison between children and care givers. Our findings could represent a further landmark for guiding the choices of health organizations on currencies to be adopted in the pediatric field. (www.actabiomedica.it)

Key words: nurs uniform, pediatric nurs, child, nurs identification, uniform color

Introduction

The nursing uniform plays an important role in the perception that the public eye has of health professionals; users identify the uniform as an important factor within the role's recognition, as an element that helps create a trusting relationship between nurses and patients. The uniform can be perceived as an important means of communication (1), as a distinctive sign of professionalism (2) and capable of exuding confidence and reassurance (3); it can also contribute to the perception of the level of cleanliness, (4) which is why each health professional must always keep his uni-

form tidy and in perfect hygienic condition to make sure their distinctive mark couldn't simultaneously become any source of infection (5). The evolution of the nursing uniform takes its first controversial steps in the 19th century, coming from ambiguous literary characters at the time whose clothing was, for the first time, applied to a figure who "takes care" (6). The first references, specifically in the context of nursing, were based on the nuns' cassock dresses (who at the time were those assigned to the care of the sick); in fact, the first real reference in literature goes back to the deaconesses of Kaiserworth (during the first half of the nineteenth century) (7). Florence Nightingale will

then be the one to define and add prestige to the nursing uniform (designed by one of her students) and to the nursing profession's reputation in general, thanks to the service rendered during the Crimean War (8). From that time until the Second World War, the nurses' uniforms would not have undergone great changes, while always, for obvious reasons, sustain an influence from the military sphere (9) and with white as the predominant color (10). Over the years, especially to comply purely to hygienic needs, the nursing uniform models lost their 'complexity' and progressively deviated from the militaristic and authoritarian connotations, to assume different shapes and colors, signs that characterize the modern and current nursing uniforms (11), increasingly distant from the conception of a single and standardized model (12). Undoubtedly, the pediatric patient represents an important communication challenge for nurses, because the outlets used to approach a child must be completely different from those used with adult patients. The uniform represents a non-verbal communication mean so, the encounter between health professionals and a child patient raises a significant amount of emotions, starting from the eye contact with the nurses' uniforms and its colors (13-14). To facilitate hospitalization, the pediatric hospital environment (furnishing, beds, walls) should be suitable for children as much as possible, including the uniforms of the health personnel, especially nurses who unfortunately often appear neutral, inexpressive and not very suitable to a pediatric environment. The fact that, for example, most nursing uniforms are white, while on one hand can be a clear sign of professionalism for adults (15), on the other hand can be a source of fear and worry for children (15-18). The traditional uniforms seem to exude different negative emotions in a child; in general, studies have in fact reported fear that can be associated with anxiety (19-21) if not even increased perception of pain levels from the treatments received (22-24). In other cases, evidence clearly shows that the uniform can act as a real communication barrier between the nurses and the children (15, 25, 26). For these reasons, in the pediatric field, what has emerged is an increasingly frequent use of nursing uniforms adapted to the children's liking and preferences (27, 28), to try to ease the contact with the patients and increase the level of

collaboration. Amongst the new models used in treatment scenarios, we can observe colorful nursing uniforms (multicolored or pastel colored), with drawings or cartoon/videogames characters, others are even designed especially to be drawn on. Studies report numerous effects, almost always positive, starting with those who exhibit a significant improvement in the relationship between nurses and children through fear and discouragement decrease (14-16, 18, 26). In several other cases, the children-adapted uniforms seem to improve the perception of the children and their parents: they would seem to be able to elevate expectations (29-31), to contribute in establishing a better and more reliable professional image (16, 27) and to create a more relaxed atmosphere and environment (32). In conclusion, although the field of research on this specific topic is not so wide, the indications transposed in literature would support the use of nursing uniforms adapted to pediatric patients. It is necessary to underline that the carried out studies, make more references to the opinion of children and parents; while those that could have examined the health professionals' preferences and assess whether they concurred with the children's choices, were practically non-existent.

Objective

The study had a twofold objective: on one hand, to understand the preferences of pediatric patients about the nursing uniform, on the other hand, from the health professionals' point of view, to evaluate the importance and meaning they apply to their uniform, to verify the child-adapted uniform options available to them when recruited and lastly, to verify whether both categories concurred on the uniform style choices.

Method

Ethical implications

The Chief Medical Office of the Hospital was informed; since the study project did not include sensitive data collection to trace the participants, the consent was released. Participation was voluntary; participants (children, with the support of their parents,

and nurses) were informed that any information given was strictly confidential and used exclusively for the research's purposes. The consent to participate in the study was based on the parents' acceptance to give the requested answers, while for the nurses, by returning the questionnaire once completed.

Setting

This study was conducted in northern Italy, involving several Units (most of which Pediatrics Units) of the New Children's Hospital of the Parma University Hospital.

Study 1 design

The first descriptive observational study was conducted in the period from June to November 2017.

Sample. Convenience sampling was used to select 107 children, recruited in various pediatric departments (excluding the pediatric intensive care unit), according to the following criteria of inclusion: 1) aged between 3–7 years; 2) perfectly capable of interacting, understanding and willing; 3) Italian mother tongue 4) walking children with stable conditions, therefore just requires hospitalization or ambulatory treatment (low complexity patients). It is specified that the choice of a fairly wide age range was justified by the fact that in literature, no clear association was defined between age groups and different emotional levels in relation to the colors of the nursing uniforms; for the same reason, we did not even investigate upon previous contacts with the health setting and/or health professionals (16). Since a *hic-et-nunc* opinion was required, it was finally decided not to establish a particular selection criteria regarding the length of hospitalization stay.

Procedure. The children and their parents were contacted and recruited personally by the researcher, dressed in civilian clothes with only an identification badge regarding its role in the organization. We verified the children's age with a direct question to the parent (which was not registered anyway), we then passed to the direct and manual delivery of the format containing the suggested models of nursing uniforms.

We transcribed the expressed preferences on paper and later, at the end of the daily inquiries, on electronic format (Excel database). It was eventually considered appropriate to reach a sample of 107 children, based on previous studies conducted in literature on this topic (14, 16, 31).

Instrument. The survey was carried out using a self-produced research tool, consisted of a paper format with colored photos of six different nursing uniforms shown in sequence on a single sheet (A3 format on a rigid base) and numbered from 1 to 6.

The photos were created by a professional photographer, making a single "model" nurse wear 6 types of nursing scrubs, always in the same position and with the same facial expression in order to not influence the choices made (14). In one photo the nurse-model wears the scrubs which are currently worn by the nurses (totally white); the other 5 scrub styles, modified while respecting the styling of the basic model, in addition to the pastel colored backcloth (yellow, pink, blue, green and white), were instead decorated with cartoon or popular videogames characters (mainly from Walt Disney). Finally, we deliberately chose to not the model wear caps or hats of any kind to avoid to arouse fear (16) (see annex 1). The paper format was then shown to the children, with the request to choose their favorite, by pointing with their finger on one of the six photos and followed by the immediate transcription of the data.

Study 2 design

The second study, observational and descriptive, was conducted in the period from August to November 2017.

Sample. Convenience sampling was used to select 101 nurses within various Hospital Units (therefore also not specifically in the pediatrics field), without adopting any particular criteria of selection but simply questioning nurses who were immediately available. The choice not to select strictly pediatric nurses was suggested by the very nature of the survey performed, therefore to disclose the opinion of a professional group in general (rather than a part of it); however, we



Annex 1.

adopted the balance between nurses in pediatric and non-pediatric areas so to have the opportunity to make comparisons within the professional group itself.

Procedure. Professionals were contacted and recruited personally by the researcher, dressed in civilian clothes with only an identification badge regarding its role in the organization. We used the same methods of distribution (direct and manual delivery of the research tools) and data collection (transcription of the expressed preferences on paper and then on electronic format); we didn't verify the professionals' age because not helpful to the investigation.

Instruments. This second survey was carried out using two research tools. The first, used for both studies, was the format containing the suggested models of nursing uniforms (see annex 1); we simply ask the

nurses to express their preferences. We then used a second tool: an *ad-hoc* structured questionnaire. In the introductory part, in addition to providing a brief presentation of the research, the processing of data was guaranteed to be in an absolutely anonymous form. With the first open-ended question, the nurses were asked to define the meaning attributed to their own uniform with three terms; the second closed-answer question (yes or no), questioned whether they would be willing to change the uniform. What was in fact asked was "Would you be willing to change the model of your uniform based on children's choices?".

Data analysis

The descriptive analysis, included the lemma qualitative analysis and the chi-square tests, useful for assessing the statistical significance of the choices

made, were computed through the IBM SPSS statistical program, Statistics Version 23.0 software package (IBM Corp. 2014); p values <0.05 were considered statistically significant.

Results

Study 1

Sample characteristics. The sample size of the study on children and their gender characteristics are described in table 1. The final sample was made up of 107 children, of whom 58 (54.2%) males and 49 (45.8%) females.

Regarding the frequency of the choices made by the children on the proposed nursing uniform models, what was observed was that most of the preferences fell on the light blue uniform with 39 selections (36.4%), followed by the pink uniform with 21 (19.6%), green with 18 (16.8%), yellow with 15 (14.0%), white with 10 (9.3%) and lastly, the white uniform that is currently in use (without themes) selected only by 4 patients (3.7%). Considering the gender differences, a certain inhomogeneity can be observed on the choices made. The preferences expressed by females were mostly focused on the pink uniform with 18 preferences, followed by the light blue and green uniform equally with 10 preferences each, the white and yellow uniform tied with 5 preferences each and lastly, the in-use uniform with just a single preference. For the male patients,

the most chosen uniform is the light blue one instead with 29 expressed preferences, then the yellow uniform with 10, the green with 8, the white with 5 and lastly the pink and the in-use uniform tied with only 3 preferences each. What can be observed is that if on one hand there is a significant divergence regarding the most chosen uniforms, which determines the significance of the aggregate data $\chi^2 (5; N = 107) = 22.26$; $p < 0.01$, there definitely is a convergence in regards to the uniform that had the least number of preferences: the in-use uniform.

Study 2

Sample characteristics

The sample size of the study on nurses and their characteristics on the working areas are described in table 3. 150 questionnaires were distributed in various Units. Of these, 116 have been returned; 9 questionnaires were excluded from the sample because incomplete. The final sample was therefore made up of 101 nurses of which 49 (48.5%) from pediatric areas and 52 (51.5%) from other care areas.

The frequencies of the choices on the uniforms expressed by the nurses are summarized in table 4. In general, the preferences laid on the light blue uniform with 32 selections (31.7%) stand out; followed by pink with 22 (21.8%), green with 19 (18.8%), yellow with 14 (13.9%), then white with 10 (9.9%) and finally the in-use uniform with only 4 (4.0%) expressed preferences.

Table 1. Study 1: Sample number by gender

Gender	N	%
Males	58	54.2
Females	49	45.8
Total	107	100.0

Table 3. Study 2: nurses' working areas

Working area	N	%
Pediatric nurse	49	48.5
Not pediatric nurse	52	51.5
Total	101	100.0

Table 2. Study 1: children's frequencies expressed on nursing uniforms

Gender	White with themes	Yellow with themes	White in use	Blue with themes	Green with themes	Fuchsia with themes	Total
Males	5	10	3	29	8	3	58
Females	5	5	1	10	10	18	49
Sub Total	10 (9.3%)	15 (14.0%)	4 (3.7%)	39 (36.4%)	18 (16.8%)	21 (19.6%)	107

Table 4. Study 2: Nurses' frequencies expressed on nursing uniforms

Working area	White with themes	Yellow with themes	White in use	Blue with themes	Green with themes	Fuchsia with themes	Total
Pediatric nurse	2	8	0	8	15	16	49
Not pediatric nurse	8	6	4	24	4	6	52
Sub Total	10 (9.9%)	14 (13.9%)	4 (4%)	32 (31.7%)	19 (18.8%)	22 (21.8%)	101

In reference to the related areas, the most frequent choice of the pediatric nurses are in favor of the pink uniform with 16 preferences and secondly the green uniform with 15, just one less; next are the yellow and the light blue with 8 preferences each, a side the white one with 2 preferences and lastly, the in-use uniform that has not received any preference. Among nurses not belonging to pediatric units, the first choice, with 24 expressed preferences, is the light blue uniform; all the others that follow are below 10 preferences each: the white uniform with 8, then tied with 6 the yellow and the pink. The in-use uniform is once again in last place with 4 preferences tied with the green one. The choices between the two groups differ significantly χ^2

(5; $N = 101$) = 26,734; $p < 0.01$ and substantially, as in study 1 for the children, determined by the first choices, while the presence of the in-use uniform being the last choice is emphasized in both cases. Eventually the result of the comparison between the choices carried out by the children and the nurses, does not point out statistically significant differences χ^2 (25; $N = 208$) = 30.575; $p = 0.20$.

The answers to the question “define with three terms what your uniform means to you”, are summarized in chart 1. 302 terms have been reported as a nurse has only expressed 2; by affinity some terms have been conventionally merged into lemma, depending on the most frequently reported term: “comfort”

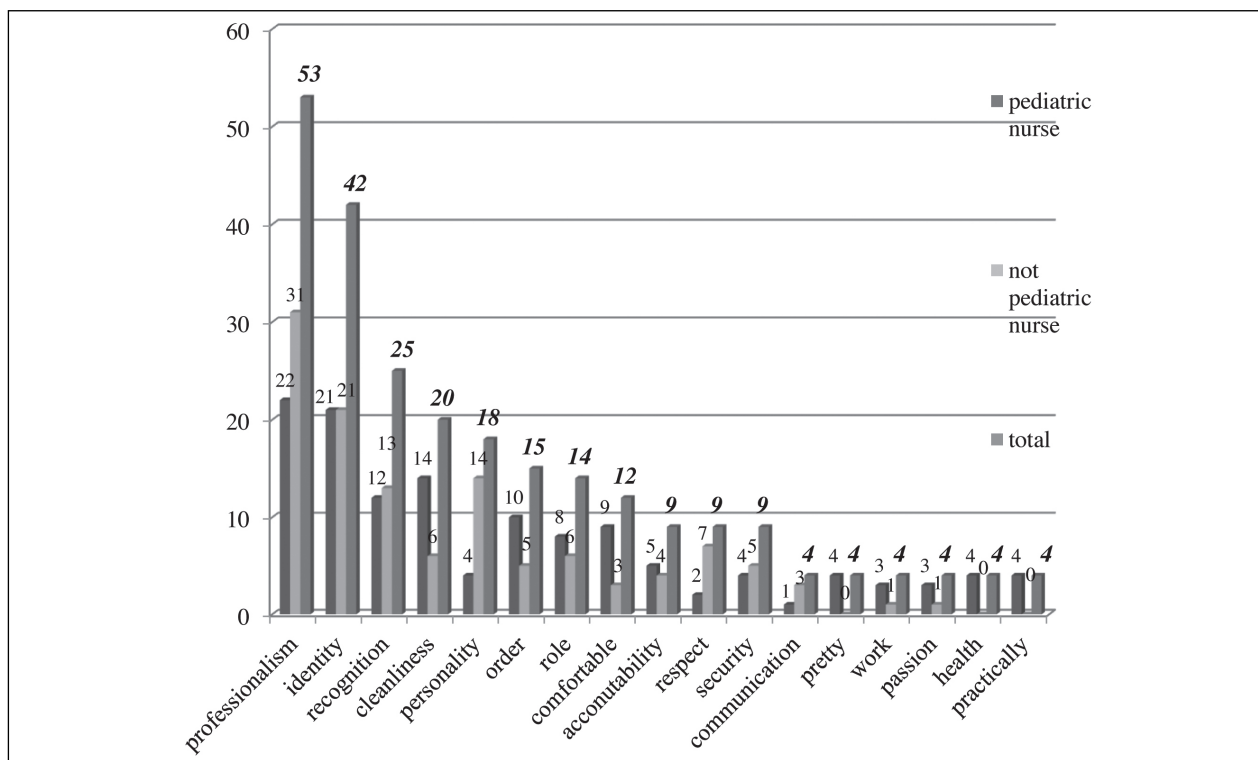


Chart 1. Study 2: Nurses' frequencies about terms to define their uniform (only if $\neq 4$)

Table 6. Study 2: nurses' availability to change their uniform according to children choices

Availability to change	No	Yes	Total
Pediatric nurse	1	48	49
Not pediatric nurse	4	48	52
Total	5 (5%)	96 (95%)	101

(comfortable-comfort), "identity" (identifying-identification-identitarian-identity), "order" (tidy-order), "personality" (person-personal-personality), "practicality" (practical-practicality), "cleanliness" (cleanliness-cleaning); thus 51 terms/headwords were identified. The most frequently reported is "professionalism" expressed as many as 53 times (17.5%); half of the sample in practice. Among the most mentioned there's also "identity", reported 42 times (14.0%), "recognition" (25 times, 8.3%), "cleanliness" (20 times, 6.6%), "personality" (18 times), 5.9%, "order" (15 times 5.0%), and "role" (14 times 4.6%). To follow all the others, concluding with a substantial number of terms cited 4 times (6 terms), 3 times (4 terms), twice (10) and only once (20 terms). Considering the nurses' working areas (pediatric units or not), the differences regarding the choice of terms are statistically significant $\chi^2 (60; N = 302) = 98.385; p < 0.05$. Regarding the most cited, the term "professionalism" is the most frequently expressed both for nurses with pediatric affiliation (22, 15.0%) and not (31, 20.0%); the second most cited term is "identity" that was reported 21 times by both groups (14.3% vs 13.5%). While the third term "recognition" takes place in both groups almost on the same level with 12 (8.2%) and 13 (8.4%) citations respectively.

The answers to the question "Would you be willing to change the model of your currency based on children's choices?" are summarized in Table 6. The response shows that as many as 96 nurses (95%) express to be in favor of changing and only 5 (5%) expressed reticence, with no significant differences in reference to the working area $\chi^2 (1; N = 101) = 1.712; p = 0.20$.

Discussion

The results produced in this study allow us to address different points of discussion. In the first study,

that refers to the preferences expressed by the children, the colored and themed models are in the first places, a result that we could almost define predictable according to the literature involving the subject since the 60s and that can indeed explain the prevailing choice on uniforms with bright colors with the fact that they can stimulate positive emotions in children (38-40). Amongst the most appreciated models there is the light blue one followed by the pink one; with the other colored models as runner-ups. Very few doubts though remain on one aspect: the "classic" white uniform without themes (usually worn by nurses including the units where the study was carried out) finds very few admirers, such as the white uniform while still being themed; a fact that proves to be in line with the literature according to which the white color can exude fear in children (15). The gender differences stand out in regards to the expressed preferences, the male patients in fact express a clear preference for the light blue uniform while the pink one is the most chosen among female patients. This can be explained thanks to the broad field of research dedicated to gender stereotypes that clarify the reasons behind involuntary choices (being socially induced) in children that can influence choices even as adults (41). Another aspect though unifies the choices by gender, this being in reference to the white in-use uniform model that in both cases, was the least appreciated. For what concerns the second study (on the nurses), we also find the light blue and pink uniforms respectively in first and second place among the most chosen uniforms, this result is applicable on the children's study, but since the nurses were not asked to indicate gender, it is not possible to proceed with a specific analysis in this sense; however, aggregating the data on the expressed preferences, the two models in question, represent 53.5% of the whole sample, thus more than half. Data on the latest choices can also be applied on the first study, where the white in-use model uniform is found in last place. Among pediatric nurses, the pink and green uniforms are the most popular; what should be noted is that the in-use white uniform did not receive any preference at all, this being among the nurses who work in a pediatric unit every day. In general one of the less appreciated models is the white themed one, which further emphasizes the idiosyncrasy between the nurs-

es and the color of the uniform that they wear every day. Among the non-pediatric nurses, the preference for the light blue uniform model prevails and, in last place, the green themed one and of course the in-use white one. What's interesting is the comparison between the preferences expressed by the two categories in the study, children and nurses, that seem in perfect harmony on basically all the expressed preferences. In fact, in both cases, there is an agreement both on the first choices, the light blue model and the pink model, and on the last converging choices regarding the in-use model. This aspect defines originality of the present study: the opinions of children and professionals have in fact almost never been compared in literature, generally favoring preferences and comparisons between children and caregivers, usually represented by parents. Nurses define the meaning attributed to their own uniform in various ways; in line with literature in fact, among the terms expressed, the preferences for 'professionalism' (2, 33-35), and 'identity' (35-37) stand out. Followed by the terms 'recognition' (that conceptually differs from 'identity' (42) and it was therefore preferred to be left by itself) 'cleanliness', 'order' and 'role'; then the remaining 46 terms/headwords. Some definitions were original and unexpected, such as 'smile', 'decorous', 'vivacity', 'cheerfulness', 'beautiful', 'graceful', 'aesthetic', all words that reflect an image of freshness and pleasantness that perhaps nurses would like their uniform to represent, and many other terms according to which each professional used to express their own interpretation of the uniform. What must be underlined is ultimately how particularly moral, intellectual and professional terms were expressed and, except in a few of cases ('suffering' and 'fatigue'), no one has reported terms expressing concepts of negativity. Continuing with the last exanimated aspects, there is almost a unanimity on the answers to the question asking to express one's willingness to change the uniform model based on the children's wishes, which judging from the answers can be interpreted as a sort of request rather than a simple expression of openness to change. If the uniform is therefore perceived in such a way by the professionals, who express their full willingness to wear a model different from the usual cliché, then we can deduce that turning towards alternative proposals, can be seen as a choice suggested by common sense,

accepted and almost encouraged by both professionals and children.

Conclusions

Both studies have limitations. The choice to not define the children age groups was suggested by what was found in the literature; however, it could certainly be meant as a limit since it does not allow to investigate possible associations with the preferences on models. As for nurses it could be interesting to carry out a larger-scale investigation with a clear definition of the nurses' areas of work so as to understand if and how the amount of contact with the pediatric patients can affects the choices. A limitation for both the studies can be considered the fact that we investigated the preferences but not the emotions aroused by the nursing uniform models (and therefore on the possible associations and differences); it is a lack which, however, could represent an interesting future field of investigation. Furthermore the specific geographic setting may limit generalization of our findings.

The results show that an adapted nursing uniform, accompanied by familiar and child-friendly features, meets their unconditional approval. What's highlighted is the fact that nurses perceive their uniform as a symbol of recognition and professional identity, while associating it with distinctive, deep and important values, merged with the expression of full willingness to change this distinctive sign of their profession in accordance with the children's preferences. What seems iconic is that the in-use uniform model found very few admirers, a factor that links the children and nurses' opinions, who also stressed the importance attributed to the uniform itself. It would be appropriate and necessary to find proper solutions and strategies in order to facilitate the contact between nurses and children; an adapted nursing uniform could represent a valid solution to ensure an easier dialogue and contact, bringing the nurse closer to the child, almost like a playmate. A nurse who participated in the study told us how the simple fact of showing the paper sheet depicting the colored uniforms was enough to relax the atmosphere during her first contact with the child, who immediately requested a copy to color himself while

usually, getting a simple “hi” out of them is already a challenge. This study represents a further contribution of how effective the use of a nursing uniform can be adapted based on features that children would appreciate; it is economically accessible because it doesn't involve excessive organization costs. The recognition of the uniform itself and the nurses' professional identity remains untouched and above all a child-adapted uniform can ease the approach with the children within the hospital environment, where the nurses usually represent their first reference point in the hospitalization process.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article

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