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RESEARCH OF PSYCHO-EMOTIONAL STATUS OF CHILDREN BY COLOR DIAGNOSTICS

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Abstract

The aim of this research was to study the effect of hospital greenery on the psycho-emotional status of children receiving long-term inpatient care.

Over the centuries, people have used natural resources for relieving psycho-emotional tension. It is known that visual and tactile contacts with flora help people to realize their place in the world relieve psycho-emotional tension and enhance recovery process.

A "green room" with specially selected room plants was created in the Pediatric Endocrinology department of "Mouratsan" Hospital of Yerevan State Medical University for the research of hospital greenery's influence on the psycho-emotional status of the patients. Two groups of children, aged from 6 to 14, each group formed by 21 teenagers, who were receiving inpatient care, were studied for the research of their psycho-emotional status.

The course of treatment, except the medicamental one also included a 10 day art-therapy by the clinic's psychologist. The first group of children (study – N1) has received art therapy in the "green room". The second group (control – N2) hadn't visited the "green room". The research of the children's psycho-emotional status of the 2 groups was carried out using the method of "Wonderland of feelings" by Zinkevich-Yevstigneyeva T.D.

The diagnosis was made according to 3 parameters: whether all the colors were used, the adequacy of the color choice during the coloring of feelings in the houses and the color distribution in the human silhouette.

The research has testified that attendance in the "green room", the contact with live plants improve the emotional status of children, help them to study and perceive themselves and their feelings.

The Greenery must be considered as an immense natural hygienic and decorative-esthetic factor for convalescence and improvement of the patients' environmental conditions when they are in medical and prophylactic institutions.

Keywords: hospital greenery, psycho-emotional comfort, art-therapy, ousting of color, emotions and colors.

Introduction

The provision of medical and prophylactic institutions with comfortable environment is one of the most important sanitary-hygienic problems. The disease related to patients' attendance in the clinic, disrupts patients' social relations, their attitude to external environment and endangers not only their habitual life conditions, but also the stability of their inner world. It causes torturous anxiety, fear and tension, makes pain syndrome more severe, which, as a result prolongs the recovery process [*Khardi E, 1988*]. The return of convalescent patients to their routine life guarantees good results and prognosis of the disease in maximum short terms. The problem of children's adaptation to the hospital has become very topical and the medical staff of the pediatric clinic has to help children to get accustomed to the new environment easily.

The research conducted in USA among the patients of the surgical department, has revealed that the presence of plants and pot flowers in the ward has a favorable influence on the convalescence period, alleviates stress and draws away the patients' attention from painful feelings. Patients who were in the wards with room plants showed positive physiological reactions, felt little pain, anxiety and fatigue. The nurses have noticed that the patients, who were in the wards with decorative plants and

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were looked after in the post-operative period, were discharged from the hospital more quickly [*Seong H, Mattson R, 2009*].

Flora serves as the most important instrument for improving and satiating our environment with color, as it offers a diverse palette of plants with active "architectural" forms and colors. The addition of certain coloring plants into the interior improves the esthetic properties of the premises, provides psychologically more favorable surroundings and promotes excellent mood [*Rodichkin E, 1990, Radchenko T, Lukina N, 2005*].

Visual and physical contacts with flora have a favorable influence on the health as the design of the environment has a direct effect on the health and wellness of people [*Jackson L, 2003; Maller C et al., 2006*].

The aim of the research was to study the effect of hospital greenery on the psycho-emotional status of children receiving long-term inpatient care.

Materials and methods

The method of "Wonderland of feelings" by Zinkevich-Yevstigneyeva (2006) was implemented in order to study the influence of the hospital greenery on psycho-emotional status of children. The selection of this method is justified by the fact, that it gives a chance to reveal the complete picture of the psycho-emotional status of the person participating in the research.

A "green room" was created in the University Clinic "Mouratsan", implementing the functional abilities of medical phytodesign technologies for conducting this research [*Radchenko T, Lukina N, 2005; Vardanyan K, Hayrapetyan A, 2009; Vardanyan K et al., 2011*]. Two groups of children, aged from 6 to 14, each group formed by 21 teenagers, who were receiving treatment in "Mouratsan" University Clinic were examined to fulfill the goal. The course of treatment, except the medicamental one included a 10 day art-therapy by the clinic's psychologist.

The first group (study – N1) included children who have received art therapy by the above-mentioned method in the "green room". These patients spent there one hour every day, having the chance for visual and physical contact with the room plants. The children had the chance to choose a blossoming "green" friend according to their preferred own color, and if desired, take care after the plants (Fig. 1).

The second group (control – N2), received art-therapy by the same method but without visiting the green room.

The children from both groups were tested by the method of "Wonderland of feelings" on the first day of the research. The children received colorful pencils (red, yellow, blue, green, violet, brown, grey and black) and a blank paper, where the main emotions were mentioned (happiness, pleasure, fear, guilt, sorrow, malice, interest) in small houses and human silhouettes (Fig. 2) [*Vardanyan K et al., 2011*].

Figure 1.*The process of therapy in N1 group.*

The diagnosis was made according to the following parameters:

1) Whether all the colors were used; 2) if the choice of colors was adequate to painting the emotions in the houses; 3) color distribution in the human silhouette.

The silhouette is symbolically divided into 5 zones:

- head and the neck symbolize mental activity,
- trunk up to the waist – emotional,
- hand up to the shoulder – communicative,
- coxofemoral – area of sexual and creative feelings,
- legs – sense of confidence, as well as the possibility for "earthing" negative feelings.

The coloring of zones in the human silhouette defines the degree of the own body perception. Not colored zones of the silhouette testify that these parts of their own ego remain unstudied, not clear to them.

The next diagnostic criterion was adequate choice of color for house coloring. Since birth color surrounds each of us, having an objective, direct influence on human organism, nervous system and psyche. Color like energy is essential for maintaining the central nervous system tone. There

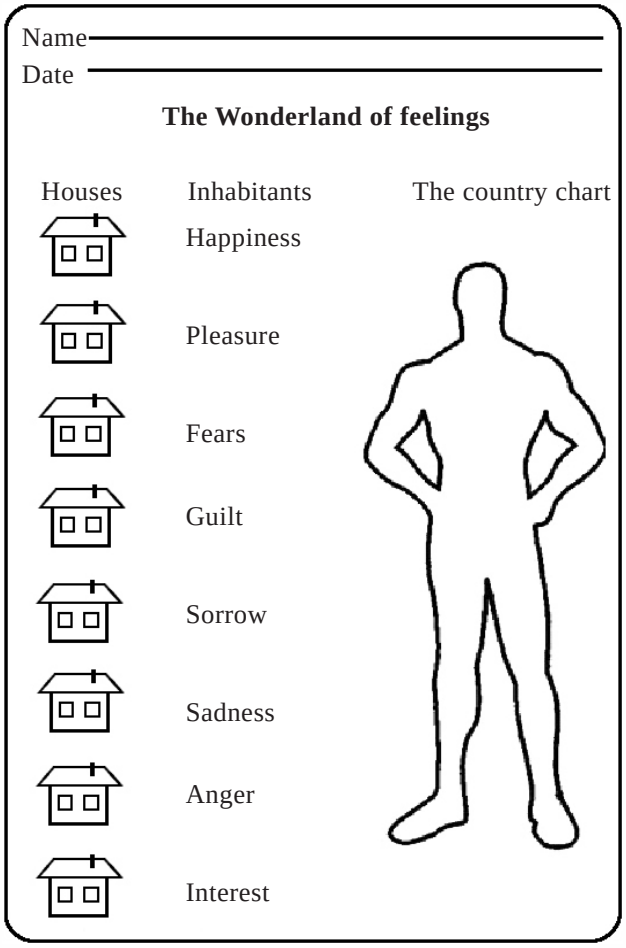

FIGURE 2. *The blank forms used in the "Wonderland of feelings" method.*

are known cases of so-called "color starvation", when the color indigence of the landscape and surroundings caused symptoms of asthenia. A retardation of mental development was noted in children, who were living under the conditions of color indigence [*Bazima B, 2007*]. In his "Studies about color" Gette wrote that color is the product of light causing emotions [*Gette E, 1987*]. When we say "he became black with grief, turned red with anger, became green with malice, or became grey with fear", we don't perceive these expressions literally we intuitively connect human emotional feelings, with the ability to express them with the help of colors. First of all, emotions and colors are "connected" on a very deep base. The second significant fact is the rather rigid degree of the "attachments" of a certain color to a certain emotion [*Orekhova O, 2002*].

The perception of the world of light sand color begins since early childhood. Already by the third month, the infant reacts to the red colors, by the sixth month - to the yellow, then the green and only after that to the blue colors. Blue walls worsen the child's mood, whereas the yellow and the light-green ones improve [*Serov N, 2001*]. The mentally healthy person both adult and child, understands the emotional content of the main colors and can differentiate them according to their emotional sign since the age of 3-4 [*Lutoshkin A, 1979*].

The color can be liked or disliked, but the character of its influence, the specificity of its effect on the psyche remain unchanged, independent from the state of the organism at the very moment of influence. Each color tinge has the same influence on any organism, causes quite definite dislocation in the state of bio system, no matter it is a mouse or a man. The problem of the individual preference is the problem of "needs from within". Color can harmonize the man, he is able to mobilize his resources, can appease and debilitate. Color can cure, but it also can make the subject become oppressed [*Dragunskiy V, 2000*].

Light and color have an immense influence on the formation of the human psychophysiological status. First of all this influence is mediated by the activity of vegetative nervous system, its sympathetic and parasympathetic parts.

The results of S.V. Kravkov's experimental work have shown that color effect leads to certain changes in vegetative nervous system, which first of all has an influence on the color vision [*Batuyev A, 2002*].

The perception of the red-yellow part of the color spectrum results the activation of sympathetic nervous system and the inhibition of parasympathetic nervous system. The blue and green colors have a depressive effect on sympathetic nervous system and activate effect on parasympathetic nervous system.

Such character of interrelation between the color perception and the activity of vegetative nervous system testifies of the latter's objective demand in the color irritants for their self-regulation. It allows to make a conclusion that the organism, in the state of "struggling" or "escaping", needs blue-green gamma of colors more than that of the red-yellow. At the same time the state of rest and restoration increases the demand for "active" colors and decreases the demand for the "passive" ones. In this way, the balance between two parts of

the vegetative nervous system is maintained. So, the blue color, and somehow the green one, justify their characteristics as relaxing and calming colors and that's why they are specially preferable for people, who need to relaxation and recreation. However, the long-term effect of these colors brings to inhibition and even to depression, makes an impression of something sad and boring. The red and yellow as stimulating colors, also justify their traditional characteristic features of being "active". The nervous system of a well-rested man, who has restored his energy, is "interested" in these colors and tries to work intensively and display in this way his energy. Long-term influence of these colors can bring to overexcitement and then to defensive inhibition [*Bekhterev V, 1991; Boravova A et al., 1999*].

As it was mentioned, color expresses the emotional state of the man. The results of A.N. Lutoshkin's research have shown that for the great majority of people, there is a traditional emotional evaluation of colors: the red color – excited mood, active; orange – happy, warm; yellow – light, pleasant; green – quiet, smooth; blue – sad, sorrowful; violet – melancholy, anxious; black – state of extreme dissatisfaction [*Lutoshkin A, 1979*].

In case of increasing sensitivity to the red color, the predominance of sthetic (happiness, irritation) emotions becomes obvious, whereas in case of decreasing into asthenic (sadness, fear) ones. There, where sensitivity to the blue color is increased negative sign of emotions (sadness, spiritual discomfort) is noted and in case of decrease – positive sign (happiness, placidity) is noted. Low sensitivity to the green color is connected with increased inner tension (anxiety, irritation, spiritual discomfort). "Joyful, sunny mood" can be seen, when the sensitivity to the red color is the most and to the blue one is the least, and there, where the correlation is invert -"sadness, grief, sorrow" [*Frumkina R, 1984; Yanshin P, 1996*].

A.M. Edkind has conducted a series of researches studying the color-emotional significance in adults. He studied the entailment of 8 colors of Lusher's test with 9 main emotions by Izard in one of his works (1979).

Color-emotional profiles are expressed mainly either by one color or by homogenous color combination. First of all it concerns to the "fear" (black), "sorrow" (grey, blue and black), "fatigue" (grey, black and brown) and happiness (red and yellow). The first three emotions of this list are connected with the passive-protective behavior and frustration needs. It explains the approximate similarity of color semantics of these emotions (for all of them the black color has a significant meaning). We should pay a special attention to the color expression of the anger emotion, which expressed by the colors red and black [*Edkind A, 1980*].

Summarizing the above mentioned researches we can single out the following color codes of emotions:

"happiness" —— yellow, red, green, violet
"pleasure" —— green, yellow, red, blue, violet
"interest" —— green, red, yellow, violet
"anger" —— red, black, brown
"guilt" —— violet, black, brown, grey
"sorrow" ——— black, brown, grey
"sadness" —— blue, black, brown, grey
"fear" —— black.

Retesting was conducted in both groups, on the 10th day. The results of examining the psycho-emotional status of the experimental group of children were compared with the results of the control one.

The packets of Excel 2007 and XLSTAT 2009 programs were used for statistical analysis. We've compared the results of the two groups on the first and 10th days of the research, by using non-parametric Mann-Witny's criteria ($p<0.05$).

Results and Discussion

The analysis of human silhouette's coloring degree according to the method of "Wonderland of feelings" and the further processing of the material have revealed statistically significant difference between the study an control groups on the 10th day of the research ($p=0.03$). The results of the research are given in table 1.

Much better results were received on the 10th day of the research in the study group N1, than in

TABLE 1.

The degree of silhouette coloration in the study groups on the 10th day of research

Groups	Increase		Decrease		Without changes	
	%	n	%	n	%	n
N1	71.4	15	0	0	28.6	6
N2	14.3	3	66.7	14	19.0	4

the control one. The number of patients (in whose pictures the percentage of silhouette coloring increases) in the study group, as a result of art-therapy and contact with plants,) was 90.5% (19). Decrease was not seen in any of them. In the group of patients (N2), who hadn't visited the green room, the adaptation of the child to the hospital conditions was painfully, which is proved by the research results. In this group increase of the percentage of silhouette coloring is observed-occurred only in 14.3% (3), whereas the decrease unlike the study group is seen in 66.7% (14) of children.

The analysis of the results of adequate choice of colors in house coloring and the further processing of the material have revealed statistically significant difference between N1 and N2 groups, on the 10th day of the research (p=0.01).

Based on the color codes of emotions that we received in the result of analysis of scientific literature on color psychology we calculated the adequacy of color choice in house coloring according to the method of "Wonderland of feelings" (table 2). Thus, in N1 group the number of children whose adequacy in color choice and emotion increases is 47.6% (10). This index testifies that almost half of N1 group children have improved their psychological status, they began to perceive their state adequately, cognize themselves, which definitely brings to the increase of emotional literacy and reinforcement of personality.

TABLE 2.

Adequacy of color choice in the study groups on the 10th day of the research

Groups	Increase		Decrease		Without changes	
	%	n	%	n	%	n
N1	47.6	10	28.6	6	23.8	5
N2	38.1	8	28.6	6	33.3	7

The picture is not so attractive in N2 control group. The increase of adequacy of color choice is lower by almost 10% compare to N1 group. No changes are registered in more than 11% of children in the control group at the end of the research. Only in 28.6% (6) the traumatizing conditions of the hospital and unpleasant feelings connected with staying in the hospital, bring to the decrease of adequacy of color choice in relation to emotions.

The obtained data testify that their staying in the green room, contact with live plants improve the emotional state of children, help them to study and perceive themselves and their feelings.

Greenery must be considered as an immense natural hygienic and decorative-esthetic factor for recovery and improvement of the patients' environmental conditions when they are in medical and prophylactic institutions.

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