

## Influence some chosen elements of nonverbal communication used by the doctors for patients' satisfaction after the examination

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### ABSTRACT

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**Introduction:** Sending and receiving non-verbal messages between the doctor and the patient is very important and it has an influence for the quality of health care.

The aim of present studies was to determine the influence of some non-verbal communication factors including modern technology using by doctors for patient's satisfaction after the examination.

**Materials and methods:** We have asked 597 patients. We have used NDEPT Standard Scale - (Nonverbal Communication in doctor – elderly patient transactions: Development of a tool). The authors of the scale let us use it in Poland.

**Results:** Patients were satisfied with the examination in following situations: during the examination they could see the telephone,

computer, medical items and other equipment; the distance between the doctor and the patient was less than 61 cm and there were no physical obstacles; during the examination the doctor was face to face to the patient (angle 180 or 90) and he was using gestures; the eyes of the doctor were in the same line as the eyes of the patient.

**Conclusions:** The skill of the right communication is an important factor in medicine, but it is often underestimated. But we must know that apart from knowledge the efficiency of therapy and the efficiency of diagnostics depend on the right relation between doctors and patients. Skills which are necessary to the right interaction between the doctor and the patient are usually nonverbal.

**Key words:** nonverbal communication, doctor, patient, satisfaction

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## **INTRODUCTION**

Nonverbal communication is said to be the main factor in diagnostics, treatment and patient care. It is a basic determinant of the level of satisfaction level with medical service, so that's why it is analysed more and more often. Nowadays the medical staff has a lot of instruments to determine patient satisfaction [1]. What is the result? It seems easier to predict patient satisfaction in general, thanks to measures of patient satisfaction connected with doctor behavior [2]. Two aspects are very vital – technical quality and skill of care (socio-emotions). The results of studies show that patients mix them together [3, 4]. Technical competence- (which is also called the 'instrumental' aspect of health care), involves communicating what is important, because then the patient can trust the doctor and his anxiety is reduced. Skill of care (socio-emotional – emotional aspect of the care)- [5] is connected with solicitude, taking care of the patient, honesty, sympathy and respect [6]. Patient satisfaction, especially emotional, is shown as an influence on pro-healthy behavior [7], being the result of applying medical rules [8-12]. However, from the other side, lack of this kind of satisfaction among the people who suffer from cancer is an important factor which determines whether they give up these rules. In this case, people look for emotional support [13] and then they can cause a doctor's mistake [14-16]. In this situation, a lot of patients change doctors because of the perceived lack of a doctor's emotional support during the treatment. Patients are dissatisfied because they feel that the doctors don't care about them [17,18]. Such changes are often dangerous because they cause double examinations and procedures which are useless. Studies show that there is a strong connection between patient satisfaction and his later behaviour during the treatment in health care system. Such actions also affect costs and efficiency of health care. However, there is too little knowledge in this field and we don't know precisely the impact of patient satisfaction with skill of care and technical quality [1]. If we could get such data, we would be able to organise proper trainings for doctors. There were attempts to examine doctors - personalities to determine their medical successes, but these attempts were not sufficient [19-21]. It is clear that we need alternative ways to measure interpersonal skills of the doctors. Many aspects of health care benefit from sensitivity and the skill of expressive communication with patients. If we want to reach the aim of achieving patient satisfaction, we must consider the importance of the general nonverbal communicative skills of doctors. Nonverbal communication in the health care system includes showing emotions on your face (smiles, face expressions), in body language and with movement

(finger pattering, moving arms), as well as with the sound of the voice (louder). The importance of doctors' skills in sending emotional messages in a nonverbal way and their ability to recognize patients' nonverbal signs were noticed by Hippocrates and Osler, as well as by Engel [6,22,23]. In spite of defining verbal communication and patient satisfaction [24] there have not been enough studies to understand the role of doctors in coding and decoding nonverbal skills. Such analysis is very important because patients more and more often don't express their feelings and do not talk to the doctors so the doctor's ability to understand nonverbal signs may be the only way to determine patient's dissatisfaction or level of stress. Yet the verbal interest is probably an uncomfortable and inefficient tool for the doctor, nonverbal communication could be the most important way to get in touch with the patient [25]. The aim of the present study was to determine the influence of some non-verbal communication factors including modern technology (computer, telephone and electronic instruments on the desk) used by doctors for patient satisfaction after the examination and to determine the level of patient satisfaction after the last examination with the help of the Polish version of the NDEPT Standard Scale.

## **MATERIALS AND METHODS**

### **Profile of examined patients**

There were 597 patients who were treated by surgical and non-surgical doctors. The doctors work in Non-public Health Care Centres in Podkarpackie Province. There were 136 (22.8%) pensioners, 109 (18.3%) physical workers, 91 (15.2%) office workers, 87 (14.6%) teachers, 79 (13.2%) students, 58 (9.7%) nurses and 37 (6.2%) unemployed. In this group there were 429 women (71.9 %) and 168 men (28.%). The most patients were between 18 and 29 (22.9%), the second group were people older than 60 (22.3%), next group were people between 40 and 49 (20.3%), and then the patients between 30 and 39 (18.1%). The least group were the patients between 50-59 (16.4%). 255 of the patients (42.7%) have finished secondary schools with A level exams, 140 patients (23.5%) were graduated, 88 patients (14.7%) had vocational education, 66 patients (11.1%) have finished only primary schools, 44 patients (7.4%) have finished engineering courses. Four people (0.7%) didn't give any answers. 283 patients – the biggest group (47.4%) were people living in the country, then 250 patients (41.9%) were living in the town. Only 60 people (10.1%) were living in the city bigger than 100 000 inhabitants. Four people (0.7%) didn't give any answer. Patients have also estimated their material status: good - 497 (83.2%) people, very good - 27 (4.5%) people, bad - 62 (10.4%) people,

very bad - 6 (1.0%) people. Five people (0.8%) didn't give any answer.

### **Procedure of the research/study**

The studies were done from 1st February 2010 to 30th May 2010 in three Non-Public Health Care Centres in Lubaczów. The medical service is paid there by National Fund of Health Care. There were 5500 patients in that time and every 5th person was chosen to the studies. Among 1000 patients only 597 agreed for doing the research. Before the studies an interviewer checked examination rooms (space inside, the number of items in the rooms). Chosen patients were given questionnaires after the examination, directly after leaving the room. The interviewer was asking the questions and writing down the answers in the same time. The interviewer had no connections with the doctor and his medical service, he didn't have any medical clothes and he had a badge which informed about his present profession. Next the patient who was answering the questions was given a sheet of paper with a sketch. There was a doctor's table in the middle, a bed, a poster and a mirror. He had to draw a circle showing his position during the examination and all the items he had noticed. Each patient was clearly explained the aim of the studies, was clearly assured about anonymity. They were told that these answers didn't have influence for continuing the treatment or doctor's behaviour towards him. What's more, the patients were invited to a quiet place so they could feel safe and confident.

### **Research method**

NDEPT Standard Scale - (Nonverbal Communication in doctor – elderly patient transactions: Development of a tool) was used. The authors of the scale let us use it in Poland [26].

**Reliability of translation.** To get the best reliability of translation, also semantic equivalence, We have used transcribe and translation during NDEPT translation. The original version was translated by two independent translators; they are both native Polish speakers. However, these translators are professionals and they make translations and teach English in their job in Poland.

Preparing Polish version of the scale we have used identical graphic form of the questionnaire. We have changed criteria of research sample choice (we had to get permission for using NDEPT scale from patients older than 18 because the scale applies for nonverbal communication in the interaction between the doctor and the older patient) and research procedures – the scale should include examination data (video recording) which should be estimated by an eye inspection of visual material without any sound and then it should be coded in the right way. Unfortunately, we haven't got permission for filming examinations in the rooms.

In this situation the authors of the scale permitted for using tools without these requirements. They suggested making drawings by the patients after the examination. So we had to join the annex number 1 to the NDEPT scale (drawing, part A of the scale – spacious configuration page 19). It shows an examination divided into three parts (beginning, duration and the end of the examination). Each part presents a doctor's table, a bed, a mirror and a poster. The patient had to draw a red circle (the place where the doctor was during the examination) and a green circle (his own position). Next the patient had to draw another red circle (doctor's position near the bed) and green circle (his position near the bed). Watching these drawings can determine the angles of interaction between the doctor and the patient in particular phases of the examination ( $0^\circ$ ,  $90^\circ$  and  $180^\circ$ ). If there are not any beds or tables the patient can't draw anything. In the next stage the patient should draw circles around the mirror and the poster (if he could see them) and mark items which were on the table or in different places of the room with a black crayon.

### **Description of the NDEPT scale**

NDEPT scale is divided into three parts: A – static attributes, B – dynamic attributes and C describes nonverbal attributes in details.

**Static attributes** described in part A consist of two main elements – furniture and equipment. Column number 1 involves a table, doctor and patient's chairs, an examination table, a wall (posters and brochures) a telephone, a computer, medical equipment and others (lamps, a mirror, medical documents, patients' cards, leaflets etc.). Column number 2 indicates if there are such things or not. Column number 3 is for noting special qualities of the equipment. Column number 4 is an annex number 1. Spacious configuration.

**Dynamic attributes**, developing between the doctor and the patient, are described in part B and there are four elements:

- 1) Interaction distance, B.1, it is the distance between doctor and patient's arms. Coding for the interaction distance (too far, too close, optimal) was taken from literature [27].
- 2) Vertical difference of height, B.2, is a difference of height between doctor and patient's eye level during the examination.
- 3) Physical obstacles, B3, – it is a kind of clothes – the same or changing during the examination. It can stop the interaction between the doctor and the patient [26].
- 4) Interaction angle, B4. It is an angle formed between doctor and patient's comparative position. It is measured as a distance to imaginative line (drawn according to doctor's position and parallel to the main

direction of his sight) as well as the shortest distance between them.

All these four elements included in part B are coded in a three-point scale from 0 to 2 (from the worst ones to the best ones). Columns from 1 to 4 show the range of all the three phases of the examination (beginning, duration and the end of the examination). Column 5 is for writing the results of each part after three phases of the examination. Column 6 is predicted for additional notes and conclusions.

**Movement nonverbal communication.** Properties of doctor's movement nonverbal communication are described in part C and they consist of five elements:

- 1) Position, C.1, the doctor keeps his hands, arms and legs in any combination which is coded as 'open' version (sitting straight, looking at the patient and leaning towards him, 'open' hands, fingers on the cheek) and/or 'closed' version (stooping, finger pattering, keeping hands by the body, crossing ankles).
- 2) An eye contact, C.2, the doctor looks at the patient very carefully
- 3) Face expression C.3, the doctor smiles and pulls a face.
- 4) Gestures C.4, the doctor moves his hands and/or nods his head (instead of speaking).
- 5) Touch C.5, is an instrumental or emotional sign of sympathy which is shown to the patient. The touch shows that the doctor wants to help the patient (excluding the examination) – the doctor can shake hands, keep the patient's hand, tap the patient on neutral body parts, help in getting dressed.

Each of these elements is coded in a five-point scale from 0 to 4 (from the lowest ones to the highest ones). Column from 1 to 4 are for writing the codes connected with every phase of the examination (beginning, duration, after the examination, the end of the examination). Column 5 should show the results.

We have made my own questionnaire which included variable demographic questions and two questions connected with the level of patient's satisfaction after the examination. The first question: Has your last examination been satisfying for you? The second question: Are you going to come to the same doctor if your health problem occurs again?

### Statistical analyses

We have used following statistics to describe my results: arithmetic mean, standard deviation, median, minimum and maximum value. We have used three statistics tests to verify our research hypothesis: Kendall rank correlation coefficient and Mann Whitney U Test. Apart from it Shapiro – Wilka test was used to check variable

distribution normality – none of variables had normal distribution. All the calculations were made by the aid of statistics pack STATISTICA 6.0 PL. Value  $p < 0.05$  was taken as a sufficient level of relevance.

## RESULTS

### Estimation of patient's satisfaction after the examination

Estimation of patient's satisfaction after the examination was made in a following way. It was a note with the answers for two questions from our questionnaire. The questions were related to general satisfaction after the examination and the answers correlated at a very high level – correlation coefficient  $\tau = 0.681$  and the level of relevance  $p < 0.001$ .

### Nonverbal communication in relations between doctor and patient Static attributes

**Table 1.** Static attributes given by the patients

Number	Attribute	N	%
1	doctor's desk	597	100.00
2	doctor's chair	596	99.83
3	patient's chair	593	99.33
4	examination table	299	50.08
5	wall – posters, brochures	547	91.62
6	others (mirror, lamps, medical documents)	442	74.04
7	medical equipment	555	92.96
8	Computer	98	16.42
9	Telephone	54	9.05

All the patients said that there was a doctor's table in the room - 597 (100.0%). A doctor's chair was noticed by 596 (99.8%) patients and a patient's chair 593 (99.3%). Five hundred and fifty five patients (93.0%) noticed medical equipment (beds, armchairs, balance, manometer), and 547 patients (91.6%) noticed posters and brochures on the wall. Other items (mirror, lamps, medical documents) were seen by 442 patients (74.0%). Two hundred and ninety nine patients (50.1%) indicated an examination table in the picture. There were some computers (98; 16.4%) and telephones (54; 9.1%) in examination rooms (Table 1).

### Dynamic attributes

We have measured four dynamic attributes in the interaction between doctor and patient with the help of NDEPT scale: distance between speakers, difference in their eye level, physical

obstacles and the angle of interaction. Patients have given from 0 to 2 points for each attribute. Higher score was bigger chance for nonverbal interaction and this score influenced better quality of communication between the doctor and the patient.

**Distance of interaction (distance between the doctor and the patient) in particular stages of the examination.** Patients were asked to determine the distance of interaction for 4 stages of the examination: beginning, duration, after the examination and the end of the examination. The lowest value – 0 points – patients have given for too much distance (more than 122 cm) and too little distance (less than 61 cm) – 1 point. Patients have given 2 points for the best distance from 61 cm to 122 cm.

The best results were at the end of the examination (average 1.660) and at the beginning (average 1.640). Average results of interaction distance during the examination were 1.603 and results after the examination were 1.620. The most frequent answer was optimal distance (2 points). Median was also equal to 2 points. There were from 0 to 8 points for estimation the distance during the whole examination. Arithmetic mean was 6.523 (standard deviation 2.361). Median for the sum was equal to 8.

#### **Difference in eye level between the doctor and the patient for particular stages of the examination**

Patients estimated the difference in eye level during four parts of the examination with the help of NDEPT scale – beginning, duration, after the examination and the end of the examination. The authors of the questionnaire claimed that situation when patient's eyes are higher than doctor's eyes is impossible for an effective communication so in this case were 0 points. Patients could give 1 point when patient's eye level was below doctor's eyes and 2 points when speakers' eyes were at the same height. The highest average result for eye levels was in the beginning of the examination (1.762) and in the end of the examination (1.824), a little less results were during the examination (1.643) and after the examination (1.665). Median was equal 2 at the each time. Frequency of the results connected with difference of doctor and patient's eye level during the examination was from 0 to 8 points. Arithmetic mean was 6.895 (standard deviation 1.783) and median was 8.

#### **Physical obstacles between the doctor and the patient for particular stages of the examination**

Authors of the NDEPT questionnaire divided physical obstacles in doctor – patient communication into 3 stages. There were 0 points in NDEPT scale in the situation when we could see

physical obstacles. If they were modified and their influence on communication was not too big then there was 1 point. Patients could mark the highest value – 2 points, when the obstacles were modified or there were no obstacles at all.

Patients noticed the physical obstacles the least at the end of the examination – an average result was 1.441. The lowest results were in the beginning of the examination (1.2217) and then the values were bigger and bigger during the examination (1.387) and after the examination (1.394). An average note for physical obstacles during the whole examination was 5.556 (standard deviation 3.305). The most frequent number for each stage of the examination was 2 points. 321 (53.8%) patients marked 8 points – the highest number of points.

#### **Angle of interaction between the doctor and the patient for particular stages of the examination**

Patients gave 0 points – the lowest value, if the doctor was standing back to them. 1 point was given when he was standing 'face to face'. The highest value – 2 points – was reserved in NDEPT questionnaire for the situation when patient and doctor were at the same level but their faces were in different angles. The angle of interaction was estimated for 3 stages of the examination: beginning, duration and the end of the examination. The highest average results were during the examination (1.402). In other parts of the examination average results were lower; a moment of the beginning was 1.248, and the end of the examination was 1.285. After the verification the angle of interaction during the whole examination the average results were 4.935. The biggest number of patients gave 3 points (317; 53.1%).

#### **Movement nonverbal communication of the doctor**

NDEPT questionnaire let for measuring the intensity of five nonverbal movement attributes during communication between the doctor and the patient. The position of the doctor was estimated as 'open' and/or 'closed' and face expression as a 'smile' and/or 'frowning'. There was a five-point scale for each measurement. So, the lowest value – 0 – was given when there were no attributes. Choosing „1” meant that the doctor from 1 to 24% of time was staying in an open position. If the patient gave „2” the doctor was staying in that position from 25 to 50% of the examination time, „3” for 51 – 75%, and „4” from 76 to 100%. After each measurement notes which were taken in different moments of the examination were added together so we can estimate the intensity of nonverbal movement attributes during communication between the doctor and the patient.

### Open doctor's position in particular stages of the examination

Arithmetic mean of all the patients' notes connected with the intensity of open doctor's position for all four moments of the examination was a little lower than 3. It means that the doctor was staying in open position from 50 to 75% of the time of the examination. At the same time the most frequent answer in all the parts of the examination (4 points) was the answer which indicated an open position from 76 to 100% of the time of the examination.

### Closed doctor's position in particular stages of the examination

Closed doctor's position during the interaction between the doctor and the patient happened rarely as the studies have shown. The sum of average results for all the parts of the examination was 1.273. 479 (80.2%) patients have given 0 points. It means that in their opinion the doctor has never shown closed position. 16 patients (2.7%) have given 3 points; that means that the doctor was staying in closed position from 51% to 75% of the time during the examination.

### Maintenance of the eye contact between the doctor and the patient in particular stages of the examination

Average of the sum results for the time of maintenance of the eye contact was 10.906. The biggest group of the patients has given 4 points during the all parts of the examination. This result means that the doctor maintained the eye contact with the patient from 76% to 100% of the time during the examination. The similar high number – 4 points (16 points altogether) patients have given this variable during all the four parts of the examination.

### Doctor's smiling face in particular stages of the examination

Average results: doctor's smiling face – the biggest points for the doctor were given in the beginning of the examination (2.737) and in the end of the examination (2.859). During the examination the numbers were lower – 2.45, and then, after the examination they were a little higher - 2.61. During all the parts of the examination the biggest number of the patients have given 4 points for the doctor's smiling face. It means that the doctor was smiling from 76% to 100% of time during the examination. 148 patients (24.8%) have given 4 points (16 points altogether) for all the parts of the examination.

### Doctor's frowning face in particular stages of the examination

The average results in this situation were very low; they were not higher than 0.407. The values of

median have also indicated the lack of this nonverbal attribute. Four hundred and forty seven people (74.9%) have given 0 points for all the parts of the examination. It means that this group of patients have not seen the doctor's frowning face.

### Doctor's gestures in particular stages of the examination

Average results connected with the doctor's gestures were different: from 2.198 in the beginning of the examination to 2.253 at the end of the examination. Median was equal 2. People have given 2 points for the beginning of the examination and it was the most frequent result. It means that the doctor used gestures and nodding from 25% to 50% of the time during the examination. Patients have given 3 points for the other parts of the examination (from 51% to 75% of the time). 99 people (16.6%) have given 8 points altogether for all the parts of the examination.

### Doctor's touch in particular stages of the examination

Average results: the frequency of doctor's touch in communication between the doctor and the patient were a little bigger than 1 in this group. The highest results (1.181) were during the examination. A big group of patients - 268 (44.9%) have given 0 points for all the parts of the examination. It means that the doctor didn't touch them during the whole time of the examination.

### General estimation of the satisfaction

We have asked the question 'Has the last examination been satisfying for you?' and then we have analysed the question by means of U Mann-Whitney test. The analysis has shown the connection between the telephone on the doctor's desk and higher satisfaction ( $Z=2.624$ ;  $p<0.001$ ). We have asked another question: 'Are you going to go to the same doctor of your medical problems continue?'. We have measured the level of satisfaction and found that the patients who had seen the telephone ( $Z=2.771$ ;  $p<0.001$ ) or the medical equipment ( $Z=2.868$ ;  $p<0.001$ ) in the examination room were more satisfied.

### Dynamic attributes and patients' satisfaction Distance of the interaction between the doctor and the patient

**Table 2.** Distance of the interaction between the doctor and the patient during the examination – satisfaction.

	Satisfaction (direct question)	Satisfaction (indirect question)
Results of analysis	$\tau = -0.135$ $p < 0.001$	$\tau = -0.136$ $p < 0.001$

Statistic analysis with the help of Kendall's tau coefficient test has shown that there is weak directly proportional correlation between doctor's optimal distance and patient's satisfaction after the examination.

The satisfaction was measured in a directly and indirectly way. The results of the studies indicated for a vital connection between the distance and the satisfaction in the beginning of the examination and at the end of the examination. During these two stages patients who were too far from the doctor fell less satisfaction than the other ones.

**Difference in eye level between the doctor and the patient**

**Table 3.** Eye level of the doctor and the patient during the examination – satisfaction

	Satisfaction (direct question)	Satisfaction (indirect question)
<b>Results of analysis</b>	$\tau = -0.180$ $p < 0.001$	$\tau = -0.211$ $p < 0.001$

Statistic analysis with the help of Kendall rank correlation coefficient test has shown that there is weak directly proportional correlation between doctor's optimal eye level and patient's satisfaction.

The satisfaction was measured in a directly and indirectly way.

**Physical obstacles**

**Table 4.** The existence of physical obstacles between the doctor and the patient and patient's satisfaction during the whole examination

	Satisfaction (direct question)	Satisfaction (indirect question)
<b>Analysis results</b>	$\tau = -0.141$ $p < 0.001$	$\tau = -0.157$ $p < 0.001$

Statistic analysis with the help of Kendall's tau coefficient test has shown that there is weak directly proportional correlation between physical obstacles which make the communication more difficult patient's satisfaction.

The satisfaction was measured in a directly and indirectly way.

**Angle of interaction between the doctor and the patient**

**Table 5.** Patient's satisfaction after the examination in doctor's abilities considering the angles of interaction

	Back to the patient 0°	Face to face with the patient 180°	Face at the angle 90°
<b>Satisfaction (direct question)</b>			
<b>Beginning of the examination</b>	2.80 (n=5)	1.80 (n=439)	1.83 (n=153)
<b>Duration</b>	2.75 (n=4)	1.81 (n=349)	1.81 (n=244)
<b>End of the examination</b>	2.00 (n=2)	1.83 (n=423)	1.79 (n=172)
<b>Satisfaction (indirect question)</b>			
<b>Beginning of the examination</b>	2.20 (n=5)	1.73 (n=439)	1.74 (n=153)
<b>Duration</b>	2.25 (n=4)	1.75 (n=349)	1.70 (n=244)
<b>End of the examination</b>	2.00 (n=2)	1.74 (n=423)	1.72 (n=172)
<b>Beginning of the examination</b>	2.98 (n=5)	2.54 (n=439)	2.50 (n=153)
<b>Duration</b>	2.90 (n=4)	2.56 (n=349)	2.49 (n=244)
<b>End of the examination</b>	2.77 (n=2)	2.55 (n=423)	2.49 (n=172)

The biggest average results appeared in all parts of the examination for the position at the right angle and at the half-right angle. The lowest results were obtained when the doctor was back to his patient – 0° angle.

**Nonverbal attributes and patients' satisfaction**

Statistical analysis has shown that the level of patient's satisfaction was correlated with doctor's open position ( $\tau = -0.272$ ;  $p < 0.001$  for direct question and  $\tau = -0.287$ ;  $p < 0.001$  for indirect question). It means that if the doctor was staying in the open position the patient's satisfaction was bigger.

The studies have found small correlation between doctor's closed position and less patient's satisfaction –  $\tau = -0.133$ ;  $p < 0.001$  (direct question) and  $\tau = -0.145$ ;  $p < 0.001$  (indirect question).

**Eye contact between the doctor and the patient and patients' satisfaction**

Statistic analysis with the help of Kendall's tau correlation has shown that there is weak directly proportional correlation between doctor's eye level and the level of the patient's

satisfaction after the examination ( $\tau=-0.224$  – direct question and  $\tau=-0.225$  for indirect question; in both situations  $p<0.001$ ).

#### **Doctor's face expression and patients' satisfaction**

There was average directly proportional correlation between doctor's smiling face and patient's satisfaction –  $\tau=-0.344$ ;  $p<0.001$  (direct question) and  $\tau=-0.318$ ;  $p<0.001$  (indirect question).

Doctor's frowning face was indirectly proportional with patients' satisfaction ( $\tau=0.130$  for indirect and  $\tau=0.100$  for direct question; in both situations  $p<0.001$ ).

#### **Gestures used by the doctor towards the patient and patients' satisfaction**

Gestures used by the doctor were directly proportional but at the low level to patients' satisfaction –  $\tau=-0.171$ ;  $p<0.001$  (direct question) and  $\tau=-0.140$ ;  $p<0.001$  (indirect question).

#### **Doctor's touch and patients' satisfaction**

Doctor's touch during the interaction was directly proportional but at the low level to patients' satisfaction –  $\tau=-0.183$ ;  $p<0.001$  (direct question) and  $\tau=-0.160$ ;  $p<0.001$  (indirect question).

## **DISCUSSION**

In the present research on determining the patient's level of satisfaction from a doctor's, the first element which was taken into consideration was the presence of static elements which were in the doctor's office. We discovered a correlation between the presence of a telephone, computer, medical equipment and other office accessories (such as mirrors, lamps, medical documentation) and higher level of patient's satisfaction from an appointment. These observations confirm the research by Bloom et al. [28] which, nevertheless, was conducted without the presence of person occupying the particular room. That research proved that the interior which emphasis its aesthetic character and also items which are connected with the doctor's profession may increase the credibility of a person which uses the room. They also increase the patient's level of trust towards the doctor and imply that the level of trust does not only depend on observational behaviour of interacting people. Similarly to Bloom et al. [28], we did not measure the influence of items which are in the doctor's office on the room's aesthetics but we focused on verifying the influence of static items (connected with the doctor's profession) on the patient's level of satisfaction during an appointment.

According to Frankel et al. [29] the doctor's appointment consists of many elements. The doctor gathers data about the patient, then examines him or her, formulates a diagnosis and

prognosis. In the next step the doctor recommends further examinations, explains information which might be unclear for the patient and presents his guidelines. The computer on the desk fulfills an important role of enabling a doctor to organise medical documentation and manage the patients' data. Moreover it allows doctor to use all available information. In recent studies, an increase in the usage of this piece of equipment by doctors was observed. In some cases it became an obstacle during an appointment. The changes which appeared after implementing computers resulted in either better or worse communication between patient and a doctor. In our research we found out that the presence of a computer positively influences the patient's satisfaction from an appointment. The influence of the computer's position in a doctor's office on the patients' level of satisfaction was not measured. According to Frankel et al. [29], it is a very important factor. A doctor which uses a computer with his back towards the patient makes the relations between his or her patient worse. Frankel et al. [29] also measured the influence of using a computer on the quality of communication between doctor and a patient. They focused mainly on the problem of whether a computer helps or not in establishing contact. Three ways of maintaining a communication with a patient were observed. First – verbal, which happened when a doctor was having a conversation with a patient when looking at screen or writing on a keyboard; second – visual, which is based on maintaining an eye contact with patient (for at least 15 seconds or when the doctor spoke to a patient); the third one is body language, when a doctor turns his head or whole body towards the patient when talking while using a computer. Despite the fact that these ways of communicating with a patient while using a computer were satisfactory they were not always used by doctors. In these researches it was also proved that the lack of verbal, visual or body language (while using a computer) for a period of time longer than 30 seconds resulted in creating a barrier in doctor-patient communication [29]. What is also disturbing is a fact that in the available literature there is not many information explaining how using a computer by doctors influence their communication with a patient [30]. On the other hand, the computerization of doctors' offices might have influenced the quality of medical services. That is why understanding the role of computers in doctor – patient relations is very important [31,32].

Our observations resulted in a statement which says that proper relation between patient and doctor might be connected with the presence of a cell phone on the doctor's desk. In such cases we observed an increase in patient's level of satisfaction from an appointment. It is possible that patients feel safer when they see a cell phone

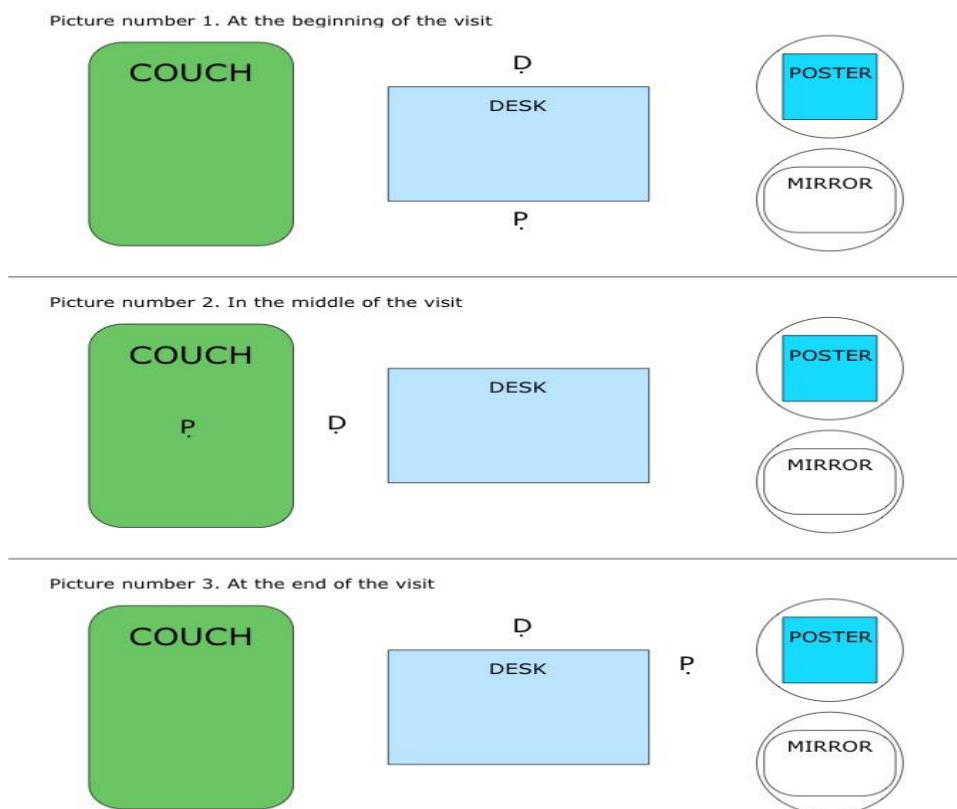


because it may indicate a possibility of contacting a doctor if need be. However, we did not manage to find any literature which could confirm the role of a cell phone in the doctor's office.

Another element of nonverbal communication which was analysed was the **distance of interaction between doctor and patient**. In my research we discovered that patients, during every step of an appointment, were most satisfied when the doctor was closer to them than 61cm. According to NDEPT scale which we used, 61 cm is described as too short of a distance [27]. Hall et al. [33] also stated that shorter distance makes communication with patient easier. The validity of maintaining close distance between doctor and patient is also confirmed by Pecyne [34]. According to him, maintaining longer psychical distance between doctor and patient is

interpreted by patient as a form of creating an emotional distance, coldness and also unwillingness to come to an agreement [34]. As results from my research, patients did not have higher level of satisfaction when they were in 'optimal distance' which is 61 cm – 122 cm (in accordance to NDEPT scale). The results of a survey which was conducted by me show that patients which were too far from a doctor (more than 122 cm away according to NDEPT scale) were unsatisfied from an appointment.

'The angle of interaction' between doctor and patient was the next element which was measured. In our research the doctor was placed in different positions towards the patient (face to face or at an acute angle or with his back towards the patient). It can be noticed in the picture below (Fig. 1).



**Figure 1.** An example figure created by patient during the process of gathering data for the survey

According to our research, patients felt least satisfied when the doctor was not facing them during the whole appointment (0 degree). Nevertheless, not many respondents gave that answer. Highest level of satisfaction were observed when the doctor was facing the patient in all stages of an appointment (180 degrees) and also when

doctor's face was angled at 90 degrees towards patient. According to Gorawar – Bhat et al. [26] on the basis of the analysis of video recordings of appointments it was observed that 58% of patients were interacting on an angle with the doctor and 36% patients were interacting face to face. These scientists however, did not measure the influence of angle in an interaction on the patients' level of

satisfaction. Ley [35] (stated that the most efficient angle in a situation when doctor and patient sit at the desk is when the doctor's face is at some angle towards the patient and not face to face [35]. In our research, the spatial relations between doctor and patient took place near table or couch. Although we did not measure the influence of this furniture on patient's level of satisfaction, researchers noticed such influence. According to Barański [36], a desk which is placed between doctor and patient is an element which forces distance between them. Barański indicates both positive and negative aspects of such interior design. The distance between doctor and patient which is forced by the presence of a doctor's desk has negative consequences both for doctor and patient such as: reducing the therapeutic role of a conversation between doctor and patient, routine in doctor's behaviour and also patient's less interest in his or her own health. As for the positive consequences, Barański included: higher attention span of a patient, better understanding and remembering the doctor's guidelines and better discipline in following these guidelines [35]. Other researchers also analysed the presence of a desk in doctor's office but not its influence on patient's level of satisfaction. Widgery et al. [36] stated that people suffering from anxiety treated therapist as more reliable when they were separated from him or her by a desk. According to White [37], if patient and doctor were not separated by a desk, the patients felt the most natural.

The **doctor's gesticulation** is also important. In our own research, we noticed the influence of this factor on patient's level of satisfaction. Griffith et al. [38] achieved results which are similar to ours. They noticed higher level of patient's satisfaction in a situation when doctor gesticulated often during an appointment. Also, Hall et al. [33] confirm that increased number of doctor's gestures leads to higher level of patient's satisfaction.

Another analysed element of nonverbal communication was the **touch**. In most cases it indicated support and care for the patient. On the basis of researches, we proved that the doctor's touch influenced the patient's level of satisfaction to a small degree. Scarpaci's [39] research proves that patients treated a doctor's touch as a proof of proper medical treatment. What is interesting is that the professional literature sometimes proves different. Lack of doctor's touch may be connected with higher level of patient's satisfaction because a touch might be treated as a will to dominate or take control over patient by a doctor [40,41]. Larsen et al. [40], also noticed that the doctor's touch lowered the patient's level of satisfaction which could have been the result of the invasion of physical privacy [40]. It is possible that cultural differences are

crucial in evaluating the influence of the doctor's touch.

In a survey, patients were obligated to mark **the doctor's posture as open and/or closed**. We observed a correlation between the doctor's open posture and increased level of patient's satisfaction. In Pecyn's research [34], 86.7% percent of respondents described the doctor's posture as open. In our research, the closed posture correlated negatively with the patient's level of satisfaction. The research by Gorawar – Bhat et al. [26] indicate that doctor showed closed posture only on 4 out of 50 video records. The patient's level of satisfaction or trust was not measured though.

Taking into consideration the **difference in the eye level between doctor and patient** the results of our research show that the most satisfied respondents were the ones which were able to maintain the same eye level as a doctor during an appointment. Gorawar – Bhat et al. [26] proved that maintaining the same eye level during a meeting makes the appointment much better. In our research at the beginning and in the end of appointment, the satisfaction levels were lower when the patient's eyes were higher or lower than the doctor's. Patients which sat below or above the doctor were not able to maintain a partnership relation and that is why it made them feel uncomfortable.

As results from above, **determining patients' level of satisfaction** is not an easy task because every patient has another personality and different aspects will be important for him or her during an appointment. There are few main aspects which determine the satisfaction. These are: interpersonal relations and the communication process, doctor's competence, availability of service and its organization, organization support, healthcare continuity, access to additional services [42,43]. Towards the needs of this paper, two additional questions made by me were used in a questionnaire to measure the general level of patient's satisfaction from an appointment. The results after analysing the results give a sense of optimism for the healthcare in these hard times. Most of the respondents confirmed that the last appointment in a doctor's office was satisfying. Patients are mostly satisfied from an appointment and its procedure. Only a few respondents were not satisfied with an appointment. Respondents also strongly stated that in case of similar medical problem they will visit the same doctor. Only 5.0% of respondents were willing to visit another doctor. It can be stated that respondents have their own idea of how the relationship between them and their doctor should look like. They are satisfied from the communication and approve the chosen doctor's behaviour. This is confirmed by a research which was taken among Warsaw clinic of primary care patients which indicated high level of satisfaction

from: contact with the clinic's of primary care personnel, good doctor's attitude towards the patient, appointment's procedure (honest, friendly conversation) [44]. Thanks to the measurement of patient's level of satisfaction the health service provider has the information how the way of treating patients satisfy the demands and needs of a patient and what are the sources of the patient's dissatisfaction [45]. However, according to Williams et al. [46] many patients does not reveal their true emotions and experiences and their opinion does not reflect the reality. Too high levels of satisfaction might be caused by incorrect measurement which is a result of wrong testing methods. These may contain questions which suggest an answer, the selection of the research group might be biased and analysis results oversimplified [47]. Fitzpatrick [48] suggests that a single event or the general impression may influence patient's opinion heavily.

## CONCLUSIONS

1. Patients were satisfied after the examination when they could see the telephone, computer, medical items and medical equipment on the doctor's table during the examination;
2. The distance between the doctor and the patient was less than 61 cm and the patients could not see any physical obstacles;
3. During the examination the doctor was staying in an open position, face to face (the angles 180° or 90°) and he was using gestures;
4. Doctor's eyes were at the same level as patient's eyes

## Conflicts of interest

The authors declare no conflicts of interest in this work.

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