

Original Article

Influence of Visual Information on Consent for Invasive Procedures in Intensive Care Unit

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ABSTRACT

Objective: Patients hospitalized in Intensive Care Units (ICU) are critically ill. Sometimes informed consent for invasive procedures cannot be obtained from patients or relatives due to insufficient information. **Methodology:** Relatives of the patients who were being hospitalized in ICUs of state hospitals in 3 provinces in Eastern part of Turkey during year 2015, who were planned to undergo central venous catheter insertion, tracheostomy, and percutaneous gastroenterostomy (PGE) were asked to sign consent forms and these relatives were included in the study. The study groups were allocated as verbal (VeIG) and verbal-visual information groups (ViIG). The next of kin who had the right for signing was included in the study. **Results:** Relatives of patients were interviewed for 512 invasive procedures. For the central venous catheterization, 91.6% of the VeIG ($n = 166$) and 97.6% of the ViIG ($n = 166$) accepted the central venous catheterization interventions ($n = 332$), for the tracheostomy, 65.3% of the VeIG ($n = 49$), 85.4% of the ViIG ($n = 48$) accepted the tracheostomy interventions ($n = 97$), and for the PGE, 23.8% of the VeIG ($n = 42$) and 48.8% of the ViIG ($n = 41$) accepted the PGE interventions ($n = 83$). A statistically significant difference was detected between VeIG and ViIG with regard to approval and refusal rates for different interventions. When approval-refusal rates were compared with regard to education level, statistically significant difference was not detected between VeIG and ViIG with regard to approval and refusal rates. **Conclusions:** Using visual materials such as video in addition to verbal information provided an improvement in consent ratios regardless of education levels.

KEYWORDS: Comparative effectiveness research, informed consent, Intensive Care Unit, multimedia

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INTRODUCTION

Patients hospitalized in Intensive Care Units (ICUs) are critically ill. This critical period which includes intensive medical applications, ventilation procedures required for respiratory insufficiency which is either the main cause of hospitalization or acquired, and the effort for returning the patient to normal life in accordance with normal physiology following ICU hospitalization is quite challenging. An ample amount of invasive procedures are applied in ICUs due to these reasons. These interventions usually include central venous catheter insertion, tracheostomy, and percutaneous gastroenterostomy (PGE), these are also life-sustaining treatments.^[1]

Informed consent should be obtained from the patient or the relative for any invasive procedures in accordance with health laws of Turkish Republic. Informed consent required for the interventions other than urgent procedures may sometimes be refused or obtained late due to insufficient information provided by physicians to the patients or relatives.^[2] When the medical history was examined, until the middle of the 20th century, the treatment process was fully under the control of

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the physician, and the patient's preference was not usually be considered. This process is referred to as "paternal medical consent" in history. Over the years, the physician and the patient settled for a common resolution on the treatment which was called "shared decision-making of the physician-patient-relative" as a period of transition. Thus, the treatment was conducted with common decisions of the physician and the patient. Transformation of "paternal medical consent" to "shared decision-making of the physician-patient-relative" may lead to unfavorable outcomes for the patient in some instances.^[3] Various methods such as conventional brochures, revised brochures, video-assisted information, information with cartoons, and computer-based assisted information have been used to obtain informed consent from patients or relatives.^[4] Although each method has superiorities depending on social status, many studies showed that visual information methods are more effective.^[4-6]

The aim of our study is to investigate the influence of verbal information and video-assisted verbal and visual information on obtaining consent for the central venous catheterization, tracheostomy, and PGE procedures in 3 state hospitals in Eastern part of Turkey.

METHODOLOGY

Relatives of the patients who were being hospitalized in ICUs of state hospitals in 3 provinces in Eastern part of Turkey during the year 2015, who were planned to undergo central venous catheter insertion, tracheostomy, and PGE were asked to sign consent forms, and these relatives were included in the study. The study groups were allocated as verbal (VeIG) and verbal-visual information groups (ViIG). Relatives were randomly selected, one group was given verbal information, another group was given both verbal, and visual information by the same physician who is a member of the team which would apply the procedure. The next of kin who had the authority for signing the consent form was included in the study (The verbal information group was also given visual information after approval or refusal responses had been recorded and the ethical breach was overcome). Visual information was given using videos through computer, verbal information was directly given about the procedure.

After the decision for the approval of the related invasive process was granted from patients' relatives, the age, gender, and educational level of the patient's relative were gathered. If the patient was planned to undergo more than one intervention, a separate interview was done for each and data of the relative were recorded separately for each intervention. Chi-square

and Mann-Whitney U-test were used for the assessment of demographic data, Chi-square test was used for comparison of data of VeIG and ViIG, for comparison of approval and refusal rates of groups at different education level.

RESULTS

Interview for obtaining informed consent for central venous catheter was done on 332 out of 512 patients (64.9%) of which verbal information was given to 166, verbal and visual information, 166. For tracheostomy, there were 97 (18.9%) patients.

Table 1: Gender ratios of relatives who were applied different information methods with regard to the procedure

Procedure	Methods	Gender	Frequency (%)	χ^2, P
Central venous catheter	Verbal	Male	157 (94.6)	$\chi^2:0.88, P>0.05$
		Female	9 (5.4)	
	Visual	Male	138 (83.1)	$\chi^2:3.209, P>0.05$
		Female	28 (16.9)	
Tracheostomy	Verbal	Male	32 (65.3)	$\chi^2:0.83, P>0.05$
		Female	17 (34.7)	
	Visual	Male	32 (66.7)	$\chi^2:0.334, P>0.05$
		Female	16 (33.3)	
	Verbal	Male	28 (66.7)	$\chi^2:1.050, P>0.05$
		Female	14 (33.3)	
Visual	Male	28(68.3)	$\chi^2:0.53, P>0.05$	
	Female	13 (31.7)		

PGE=Percutaneous gastroenterostomy

Table 2: Mean age of relatives who were applied different information methods with regard to the procedure

Procedure	Methods	Age (mean±SD)	Mann-Whitney
Central venous catheter	Verbal	42.84±13.83	0.970, $P>0.05$
	Visual	44.20±12.55	0.197, $P>0.05$
Tracheostomy	Verbal	44.77±11.76	0.842, $P>0.05$
	Visual	45.58±11.68	0.214, $P>0.05$
PGE	Verbal	44.73±10.93	0.390, $P>0.05$
	Visual	46.00±11.83	0.146, $P>0.05$

PGE=Percutaneous gastroenterostomy; SD=Standart deviaton

Table 3: Comparison of approval and refusal rates in different information methods with regard to the procedure

Procedure	Methods	Approval (%)	Refusal (%)	χ^2, P
Central venous catheter	Verbal	152 (91.6)	14 (8.4)	$\chi^2:5.874, P<0.05$
	Visual	162 (97.6)	4 (2.4)	
Tracheostomy	Verbal	32 (65.3)	17 (34.7)	$\chi^2:4.377, P<0.05$
	Visual	41 (85.4)	7 (14.6)	
PGE	Verbal	10 (23.8)	32 (76.2)	$\chi^2:5.605, P<0.05$
	Visual	20 (48.8)	21 (51.2)	

PGE=Percutaneous gastroenterostomy

Table 4: Comparison of approval and refusal rates with regard to education level of relatives in different information methods for different procedures

	<i>P</i>					
	Central venous catheter		Tracheostomy		PGE	
	Verbal	Visual	Verbal	Visual	Verbal	Visual
No Literacy - Primary School	0.404	1.000	1.000	0.494	0.273	0.176
No Literacy - Secondary School	0.186	0.417	1.000	0.569	0.423	1.000
No Literacy - High School	0.006*	0.122	1.000	0.35	1.000	0.245
No Literacy - University	0.10	0.40	1.000	0.91	1.000	1.000
Primary School - Middle School	0.715	0.567	0.428	0.624	1.000	0.275
Primary School - High School	0.55	0.60	0.218	0.318	0.115	0.002*
Primary School - University	0.302	0.533	0.633	0.467	0.077	0.101
Middle School - High School	0.182	0.313	0.678	0.042*	0.341	0.062
Middle School - University	0.561	1.000	1.000	0.254	0.250	0.619
High School - University	1.000	-	1.000	-	1.000	0.305

Chi-Square test was used to evaluate the data. * $P < 0.05$, PGE=Percutaneous gastroenterostomy

Verbal information was given to 49, verbal and visual information, 48. There were 83 (16.2%) patients for PGE. Those who were given verbal information were 42 while verbal and visual information were 41. For the central venous catheterization, 91.6% of the VeIG ($n = 166$) and 97.6% of the ViIG ($n = 166$) accepted the central venous catheterization interventions ($n = 332$), for the tracheostomy, 65.3% of the VeIG ($n = 49$), 85.4% of the ViIG ($n = 48$) accepted the tracheostomy interventions ($n = 97$) and for the PGE, 23.8% of the VeIG ($n = 42$) and 48.8% of the ViIG ($n = 41$) accepted the PGE interventions ($n = 83$).

Male/female ratios of the patients who interviewed for central venous catheter were %94,6/%5,4 in VeIG, %83,1/%16,9 in ViIG, male/female ratios of the patients who interviewed for the tracheostomy were %65,3/%34,7 in VeIG, %66,7/%33,3 in ViIG, and male/female ratios of the patients who interviewed for the PGE were %66,7/%33,3 in VeIG %68,3/%31,7 in ViIG. A statistically significant difference was not found between relatives of the patients in all intervention groups with regard to age and gender [Tables 1 and 2].

When a comparison was made between different information forms with regard to approval and refusal ratios, a statistically significant difference was detected between VeIG and ViIG ($P < 0.05$) [Table 3]. When approval-refusal rates were compared in all groups, refusal ratio was found highest in PGE groups and lowest in the central venous catheter groups [Table 3].

When approval-refusal rates were compared with regard to education level; a statistically significant difference was found between illiterate relatives and graduates of high school who were given verbal information about central venous catheter, between illiterate relatives and graduates of high school who were given visual

information about tracheostomy, between relatives graduates of elementary school and graduates of high school who were given visual information about PGE [Table 4].

DISCUSSION

Follow-up and treatment of ICU patients include an ample amount of invasive procedures. However, these invasive procedures require obtaining informed consent from patients or relatives as they are medically beneficial.^[3] If the informed consent cannot be obtained, the patient may be deprived from this beneficial procedure. In some literature studies, after the interviews to receive informed consent from patients or their relatives, understanding level of the people for the treatment, their satisfaction, and anxiety levels were measured, and their effects on positive consent were examined.^[7] In our study, no resulting test was applied, only the effect of the visual narration on decision of informed consent and the relation of visual narration and education levels of patients' relatives in the process of giving informed consent was examined.

This study has revealed that verbal information supported by visual information provided significant contribution compared to verbal information alone in all intervention groups. Most frequently asked questions by patients' relatives during informed consent were what level of benefit will the requested intervention provide to the patient, how would the patient's life be effected if these interventions were not to be applied, whether the patient will feel pain during or after the intervention patient, whether any changes in physical appearance of the patient will occur. For this reason, adding visual elements to verbal information using video has some positive aspects such as providing information about the procedure, how the procedure would influence the

physical appearance of the patient, that the procedure is a minor intervention rather than being a major operation as supposed by the relatives. It would also help the patients or their relative have a more realistic perception about the procedure.

Gagliano showed that video-assisted information provided a better knowledge compared to written document in his review study.^[8] Another study also showed that multi-media methods provided significantly better information.^[9] A study conducted with HIV-positive patients, aimed at providing information before medical treatment also supported this finding and showed that an interactive interview conducted together with video information provided a better information compared to video alone.^[5] Cartoon videos were shown to improve understanding of low educated people.^[10] Video-assisted interview was seen to improve intelligibility of the knowledge in a study conducted with low educated patients.^[6] Another study showed that computer-assisted education was more beneficial compared to conventional method. Many other studies are available proposing the opposite of the opinion that video or visual themes would improve intelligibility. These studies are mainly based on cognitive learning theory.^[11,12] Written materials are suggested to be more beneficial in informed consent process due to including more information than visual materials.^[12-14] Studies are also available indicating that written brochures would provide a better information and better intelligibility than any cognitive-based information tool if their format, writing form, presentation are well presented.^[13-15]

Written or oral information given to the listener being confusing and unorganized leads to inadequate understanding and the listener fills in the meaning gaps by himself. With visual narration, however, by explaining the information in a specific layout and schema meaning connections are built, and comprehensibility is enhanced.^[11] In this study, it was observed that visual information given relatives had a higher rate of invasive operation approval. No difference was observed in rates of acceptance or rejection on invasive procedure consent between groups informed visually or verbally when education levels of patients' relatives were compared. Hence, except for the level of education, one factor was effective in a positive direction in the decision to approve. There is a need for a factor that will lead the patient's relative to make a satisfactory decision in the process of giving informed consent. Even though the patients or relatives have received information from experts about the intervention to be applied, they undergo the process of finding a proper reasoning for themselves in any intervention consent. In other words,

a different factor was effective on their decisions for acceptance process except those differences. Our study has shown that patients or their relatives are in effort to evaluate interventional procedures within their own reasonings regardless of their educational levels or verbal recommendations of specialist physicians. Visual information helps the patient or the relative to create a satisfactory reasoning in the process of accepting the intervention. Furthermore, with many studies in literature, the visual information has been shown to be very effective in obtaining informed consent.^[16]

Although this study showed a statistically significant difference only between some education levels with regard to approval and refusal rates, a significant difference was not detected between remaining education level groups. These results show that education level does not lead to a significant difference during decision-making process. In other words, a statistically significant increase or decrease was not detected in approval rates as education level increases in all intervention and information groups.

Verbal and visual information improving approval rates compared to verbal information alone may be associated with one or more factors such as level of income, residence, culture level of the family or community, and level of kinship beside education level. Many studies are available showing the influence of education level on consent, on the contrary to the results of our study.^[3] In a study from South Africa, education level was reported to be an important factor in consent process beside regional factors such as level of income and language.^[17] Intelligibility was seen to improve with increasing education level both with written and visual information materials in the study investigating the effectiveness of visual materials in asthma patients.^[12]

Many useful medical interventions cannot be applied due to the absence of legal informed consent. Using visual materials such as video in addition to the verbal information provided an improvement in consent ratios regardless of education levels. New studies are required for determining the causes of this increase in verbal and visual information.

CONCLUSION

Using visual materials such as video in addition to verbal information provided an improvement in consent ratios regardless of education levels. We recommend that visual information supported verbal information is obtained in intensive care practice.

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Conflicts of interest

There are no conflicts of interest.

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