

# Do patients understand medical communication?

## Patients' knowledge on anatomical location of organs in human body

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### *Abstract- Introduction*

Doctors often assume that patients have basic knowledge of the body and its functioning. Patients' knowledge may vary and could depend on number of factors. Misunderstandings in consultation could lead to patient dissatisfaction, unsatisfactory compliance and outcome. This study explored patients' knowledge on location of organs.

### **Method**

This descriptive cross sectional study was carried out among patients attending the out patient department(OPD) of a government hospital in Sri Lanka where health services are free to everybody. 600 randomly selected patients marked the anatomical location of 10 selected organs on a line diagram. Their demographic data was also obtained.

### **Results**

78% were females, majority were between 35-59yrs of age and educated from grade 6-10. 81% were unemployed. Their knowledge on anatomical location of organs; Brain 99.5%, Heart 95.3%, Bladder 92.7%, uterus 90.2%, lungs 89.2%, stomach 79%, ovaries 75.9%, liver 59.3%, kidney 49.8%, thyroid 48.5%. More than 50% were able to locate 8 or more organs. Females and better educated patients performed better while the age was not significantly associated.

### **Conclusions**

Although the knowledge of the majority of the patients was good there were patients who did not know the location of even commonly referred organs. Doctors should assume that patients understand the location of organs during consultation and should avoid medical terms especially with patients whose educational status is low.

*Index Terms*— Patients, primary care, anatomical location, organs

### I. INTRODUCTION

Communication by doctors in medical consultations often assumes that the patient has basic knowledge of the body and its functioning. However, a number of studies have shown that patients do not understand the terms used by doctors and many patients do not even have a basic understanding of anatomy. Studies show that a large percentage of patients do not know the difference or similarity between pairs of medical terms (e.g. heart-attack and myocardial infarction; fracture and broken bone)<sup>1</sup>. These basic misunderstandings could have direct effect on the consultation since doctors may use anatomical and other technical terms under the mistaken belief that these will be readily understood by their patients. This overestimation of patient knowledge has been shown to have negative effects on doctor-patient communication in a range of healthcare settings<sup>2</sup>.

An early study of hospital outpatients and doctors by Boyle showed that the public awareness of the anatomical location of

key body organs was quite poor. Using a multiple-choice measure with four body outlines each indicating a possible location of an organ, Boyle showed that the location of eight key body organs was correctly identified approximately fifty percent of the time<sup>3</sup>. Another research showed that, even in patients with specific organ-related disorders, their knowledge of the location of that particular organ was poor. For example Pearson and Dudley<sup>4</sup> found only 12% of gastrointestinal patients were able to identify correctly the location of the affected organ. Such discrepancies in anatomical knowledge between doctors and patients can have significant effects in the consultation, and on subsequent patient satisfaction and adherence<sup>5,6</sup>.

Since Boyle's study almost 40 years ago there have been a number of societal changes that may have improved the public's level of medical knowledge. There have been improvements in education, coupled with an increased media focus on medical and health related topics, and growing access to the internet as a source of medical information<sup>7</sup>.

Three principal factors have been shown to influence health and disease knowledge amongst lay population as it affects different body organs. These are social class, age and educational status<sup>8</sup>. Rashid and Jagger also demonstrated a relationship between health knowledge relating to different body organs to be determined by age with younger people scoring better than older people.<sup>10</sup>

Patient population in a primary care set up usually consists of a collection of patients of both gender and different age groups, educational and social classes. Their knowledge on medical terms and anatomical locations may vary and having an understanding of their knowledge and level of understanding is extremely important for doctors and other health care providers to pitch their communications with patients at the correct level.

The present study investigated the ability of lay people to identify the correct anatomical location of key body organs and the relationship between their knowledge and demographic factors.

## II. METHODS

This was a descriptive cross sectional study. It was carried out among patients attending the out patient department(OPD) of a base hospital in Sri Lanka. OPD in a base hospital provides primary medical care to patients free of charge from 8am to 4pm. Six hundred randomly selected patients who consented for participation were included in this study. Patients needed emergency treatment, who had visual or other disability which prevented them from marking organs on the diagram properly or patients having obvious mental impairment were excluded.

Questionnaire comprised of two parts. Part one included demographic data of participants and administered by two trained interviewers. Part two comprised of a line diagram of a human body.(figure 1) Respondents were asked to mark the location of 10 specified organs by writing the number pre assigned for each organ by the investigators on the diagram.

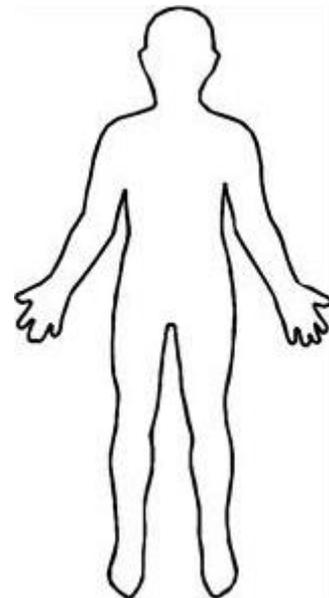
The same line diagram of the human body which was used in the questionnaire was drawn on a tissue paper and area for each specific organ was delineated. It was laid over the diagram marked by the respondents and assessed the appropriateness of the location marked by the respondents.

Ethical approval for this study was obtained from the ethical review committee of the faculty of medicine, university of Kelaniya and it was carried out in the year 2012 and data analysis was carried out using SPSS 16.

Organs and the number assigned

Brain	1
Thyroid gland	2
Heart	3
Lungs	4
Stomach	5
Liver	6
Kidneys	7
Uterus	8
Ovaries	9
Bladder	10

Figure 1



## III. RESULTS

TABLE I. DEMOGRAPHIC DETAILS

Demographic detail	frequency	%
Gender	female	78.9
	male	21.1
Age groups	<35	29.4
	35-59	51.2
	>59	19.4

Education status	up to gr 5	49	8.2
	Gr 6-10	386	64.8
	>Gr 10	161	27.0
Occupation	employed	111	18.8
	unemployed	479	81.2
Income	no income	479	81.5
	< 25000LKR	86	14.7
	25000 or more	23	3.9

Graph 1: Patients knowledge on location of organs in body.

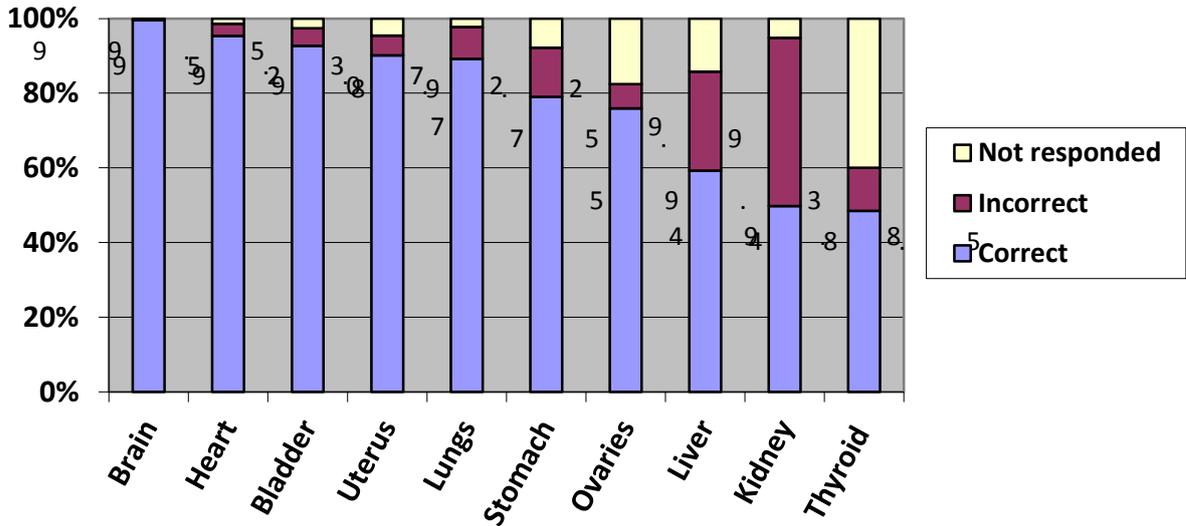


TABLE 2: PERCENTAGE OF PATIENTS WHO KNEW THE CORRECT LOCATION OF ORGANS ACCORDING TO GENDER, AGE GROUP AND EDUCATIONAL STATUS

Organ	Gender		Age group			Educational status		
	Females	Males	< 35	35-59	>59	5	6-10	>10
Brain	99.5	100	100	99.7	100	100	99.5	100
Heart	95.8	94.4	94.3	96.0	99.1	95.9	94.8	97.0
Bladder	94.7	84.9	93.1	92.8	92.2	87.8	92.7	93.8
Uterus	93.2	78.6	90.3	89.2	92.2	91.8	89.9	90.7
Lungs	89.1	88.9	85.2	85.1	92.2	85.7	88.3	91.9
Ovaries	79.2	63.5	76.1	78.1	69.8	55.1	75.6	82.6
Stomach	79.7	78.6	80.7	76.8	83.6	69.4	78.5	83.2
Liver	61.7	50.8	64.8	66.9	58.6	57.1	55.6	68.9
Kidney	48.3	56.3	59.1	48.7	39.7	34.7	50.8	52.1
Thyroid	51.0	39.7	43.2	45.0	52.6	12.2	43.8	72.0

Graph 2: Number of organs correctly marked by patients

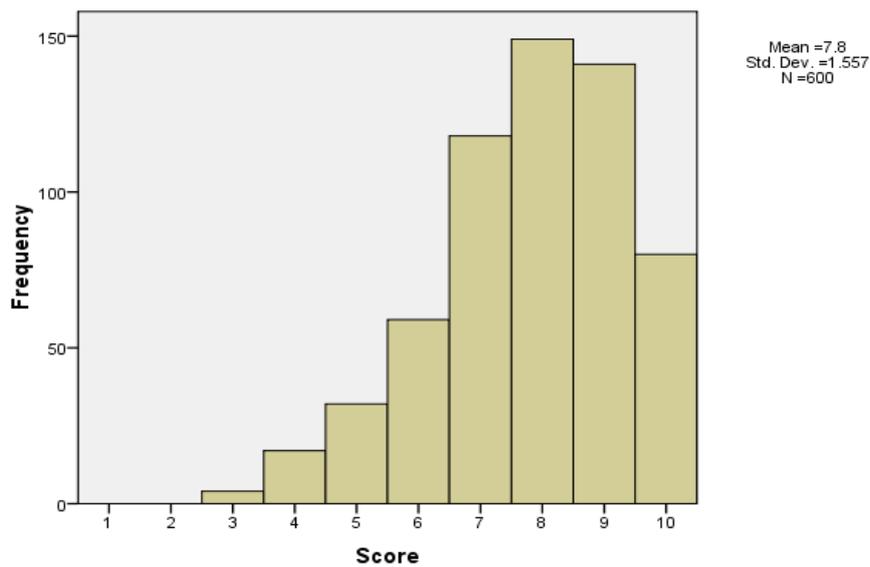


TABLE 3: NUMBER OF ORGANS CORRECTLY MARKED BY PATIENTS ACCORDING TO GENDER, AGE AND EDUCATIONAL STATUS

Demographic factor(n)	1-7 organs(%)	> 7 organs(%)	Significance
Gender Female(472)	164 (34.7)	308(65.2)	Chi-square 10.857 P= 0.001
Male(126)	64/126(50.7)	62(49.2)	
Age group 16-34yrs(176)	61(34.7)	115(65.3)	Chi-square 1.313 P=0.519
35-59yrs(306)	122(39.9)	184(60.1)	
60 yrs & more(116)	45(38.8)	71(61.2)	
Educational status Upto Grade 5(49)	27(55.1)	22(44.8)	Chi-square 20.096 P< 0.005
Grade 6- 10(386)	161(41.7)	225(58.3)	
> Grade 10(161)	40(24.8)	121(75.2)	

IV. DISCUSSION

Communication between a doctor and a patient is very important in consultation where a doctor gathers necessary information from the patient, arrives at a diagnosis and negotiates an appropriate plan of management. Understanding what is told by doctors is dependent on patients’ ability to understand common medical terms used by health care providers. Doctors often refer to organs in the body assuming that patients understand the function and anatomical location of these organs. This study explored patients knowledge on location of organs which is crucial in understanding symptoms, diseases and the importance of doctors’ instructions. This understanding will invariably result in patients’ compliance with the plan of management.

The Sri Lankan health system is such that OPDs of hospitals and central dispensaries in the sector and general practitioners in the private sector provide primary medical care.<sup>11</sup> State sector health services are free to everybody. Since OPDs functions from 8am to 4pm during weekdays and attends to patients only for a few hours during weekends, employed people are relatively less in OPDs. That explains the predominance of females, unemployed patients and those who educated only up to grade 10 or less.

90% of the patients were able to locate 5 organs in the body correctly. More than 75% marked stomach and ovaries correctly. Although relatively lower, more than 50% were able to mark liver, kidney and thyroid correctly. Female patients have generally performed better. There was no such trend between different age groups and as expected better educated patients have also performed better.

The total number of organs correctly marked by patients ranged between 2 and 10 and the mean was 7.8. It shows that more than 50% of the patients knew the location of 8 or more organs. Patients ability to locate organs is extremely encouraging and far better compared to studies carried out earlier.<sup>3,10,12</sup> This better knowledge could be attributed to many reasons; literacy rate in the country which is more than 90%<sup>13</sup>, inclusion of health science in school curriculum from grade 6 onwards, patients access to media such as television and news papers.

Females have performed significantly better. This is contrary to Kelly et al who concluded that patients’ understanding on, medical terminology was not significantly associated with the gender of the patient.<sup>2</sup> It is surprising that there’s no difference in knowledge between different age groups in contrary to findings of earlier studies.<sup>10</sup> Level of education showed a positive impact on their knowledge specially when it comes to lesser known organs. Knowledge on

number of organs also showed that it is significantly associated with the educational status. Learner and colleagues revealed that patients' knowledge on medical terminology depended on age, educational status and area of residence.<sup>1</sup>

Discrepancies in anatomical knowledge between doctors and patients can have significant impact on the consultation leading to misunderstandings, patient dissatisfaction, unsatisfactory compliance and outcome. Even though majority of the patients have performed well there are few patients who could not even locate heart correctly. It is the responsibility of the doctor to identify such patients and avoid using medical terminology and provide explanations in simple terms. According to this study education status is the most important contributory factor. People may not like to show their lack of knowledge and may not ask for explanations even when they do not grasp what is told by doctors.<sup>14</sup> Therefore doctors should pay more attention to their vocabulary with patients having low educational status.

Williams and Ogden showed that when doctors used same vocabulary as patients during consultation (matched consultation) it resulted in higher total satisfaction scores and higher ratings of rapport, communication comfort, distress relief and compliance intent than those in the unmatched group. The results indicate the importance of vocabulary on successful outcome of consultation. Moreover patients' comprehension of information should be verified by asking clarifying questions and they should be encouraged to question doctors when information provided are poorly understood or not clear.

Effective communication and information exchange is essential for patient concordance and empowerment. For communication to be effective it must be understood. Effective communication helps to establish a good doctor patient relationship which has an important and beneficial effect on the outcome of the consultation.

#### V. CONCLUSIONS AND RECOMMENDATIONS

1. Although patients' knowledge on anatomical location of organs is generally good with most of the organs studied there are patients who do not understand even commonly referred organs.
2. There is a significant correlation between knowledge on number of organs and level of education.

3. Doctors should be more careful in explaining about location of organs to patients with low education status.

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