

ORIGINAL ARTICLE

Evaluation of Clinical Information in Referral of Ultrasound Abdomen. A Cross-Sectional Observational StudyMAHWASH MANSOOR¹, RIZWANA RAHMAN BAZAI², NOREEN ISMAIL³¹Associate Professor Diagnostic Radiology Bolan Medical College Quetta, Pakistan.²Associate professor Diagnostic Radiology Civil Hospital Quetta Pakistan.³PGR, Third Year, Radiology Department Sandeman Provincial Hospital Quetta Pakistan.Corresponding author: Mahwash Mansoor, Email: drmahwashmansoor@gmail.com, Cell: +923337808844**ABSTRACT****Objective:** To determine the standard of clinical information in referral for ultrasound abdomen in outdoor patients examined at Radiology Department.**Study Design:** A Cross-Sectional Observational study.**Place and Duration of Study.** Sandman Provincial Hospital Quetta and Civil Hospital Quetta from October 2021 to July 2022.**Materials and Methods:** In current study total 3234 patients were selected and referred for abdomen ultrasound. There were 962 (28.7%) patients with clinical information provided for ultrasound while 2265 (70.0%) patients were without any clinical information. All Referral for ultrasound abdomen in Outpatient Ultrasound Department at Sandman Provincial Hospital and Civil Hospital Quetta were reviewed for written clinical information. In present study raw data were collected and analysed in patients with clinical information and without clinical information with SPSS 21.**Results:** Total Patients referred for ultrasound abdomen were 3234. There were 962 (28.7%) patients with clinical information provided for ultrasound, and 2265 (70.0%) patients without any clinical information. Data showed that most of patients were sent without any clinical information for ultrasound abdomen.**Practical implication:**

Current study was clinical information in referral for ultrasound abdomen which is so important and informative forecast about the expected medical complications. Population can be facilitated through ultrasound because the majority of ultrasound scans are non-invasive and radiation-free ultrasound imaging is quite safe. Soft tissues are clearly visible with ultrasound scanning even if they are difficult to see on x-ray images. Imaging is provided in real-time by ultrasound. There are no known negative effects on humans from standard diagnostic ultrasonography.

Conclusion. Standard referrals accompanied with clinical information are very important for ultrasound and all other radiological investigations. If the referral is not properly written with specified clinical information, it can cause miscommunication between radiologist and referring physician, resulting in the overburdening of the radiology department. It then leads to compromised patient care and safety.**Keywords:** Referral, Standard, Clinical Information, Ultrasound. Radiology, Ultrasonography, investigations, predominately, Abdomen.**INTRODUCTION**Ultrasonography is the imaging method available to all clinical specialties. Almost all of the medical fields benefit from this method⁽¹⁾. During the past decade, combination of as of use, portability and low-cost lead to increase demand of ultrasound examination, and a surge in unnecessary examination without justification^{1,3,7}.Justification of a radiological examination depends on professional evaluations, such as relevant clinical history, prior imaging, lab tests and treatment⁶. When a clinician requests imaging examination, it starts a diagnostic process to answer a clinical question⁵. Clinician expects from the imaging process to refine the working diagnosis, increase the confidence about the suspected diseases and characterize the source or extent of known disease⁴. Clinician referral is the most important way of communication between the referrer and the radiologist. Effective communication and team work is essential for high quality care and safety of the patient. Ineffective communication is a common cause of patient being harmed^{13,17,18,22}.Structured and standard referrals, containing the clinical information is required for better communication and to avoid unnecessary investigation and patient discomfort¹⁶. In 1990, Royal College of Radiologists issued guidelines for radiological referral and published several studies about these guidelines which lead to inappropriate ultrasound request¹³.At the national level, we come across different referral systems which predominately belong to private setup at the cosmopolitan cities but not in smaller cities¹¹. Locally, at government as well as private setups, no standard or structured referral pattern is followed where specifically clinical information about the patient is added⁵. With no included clinical information mislead the radiologist which sometimes can be observed in reports of imaging investigation which can cause defamation andmisinformation with development of enraged professional environment among specialties^{3,13,23}.**Significance of study:** Current study was clinical information in referral for ultrasound abdomen which is so important and informative forecast about the expected medical complications.**Research Gap:** In current study storage of data was not available. There are many specifications for the storage of ultrasound images and related data, such as the report and request form.**Rationale of Study:** Aim of the study is to highlight the number of patients referred for ultrasound abdomen without clinical information and to highlight the importance of specific clinical input by referrers.**METHODOLOGY****Study design:** A Cross-Sectional Observational study.**Place of study and duration of study:** Sandman Provincial Hospital Quetta and Civil Hospital Quetta from October 2021 to July 2022.**Sampling size:** n=3234 patients**Population size:** Overall, 3234 patients including male and female were examined for ultrasound abdomen and their referral notes were checked for provided written clinical information.**Data collection Procedure:** The study includes of all the patients referred to outdoor ultrasound department of sandman provincial department Quetta for ultrasound abdomen. All the referral slips for ultrasound abdomen were reviewed for written clinical information by the single radiologist present at the department. Patients' data were collected from 1st October to 30th December 2020. Data was divided in two groups which were patients with clinical information and patients without clinical information**Data analysed:** Data was Analysed by SPSS 21. P value ≤0.05 was considered.

Exclusion criteria: During ultrasound abdomen patients were faced with number of different medical complications like liver disease, gastric complications, abdomen pain, appendix pain etc in such condition only required data of patients were considered remaining were deleted.

Inclusion criteria: Communication is the key for good patient care and safety, which is the primary aim of health care system. Ultrasound as an imaging modality, which is taken as first line of investigation, is in dire need of efficient referral, which must contain specific clinical information to avoid mishaps, patient discomfort, repeat scan and departmental exhaustion.

RESULTS

Overall, 3234 patients including male and female were examined for ultrasound abdomen and their referral notes were checked for provided written clinical information. Total Patients with clinical information written on the referral slip were 962 (29.75%) and without clinical information were 2265 (70.0). In the month of October total patients were 1095 and patients with clinical information were 334 (30.5%) and without clinical information 765(69.86%). In month of November total patients were 923 and patients with clinical information 274(29.69) and without clinical information is 649(70.31). In month of December total patients were 1216 and patient with clinical information were 354(29.11%) and without clinical information were 851 (69.98%). Additionally, recent studies have demonstrated encouraging outcomes when evaluating residents' and medical students' capacity to do US examinations with a pocket ultrasound equipment following a brief training phase.

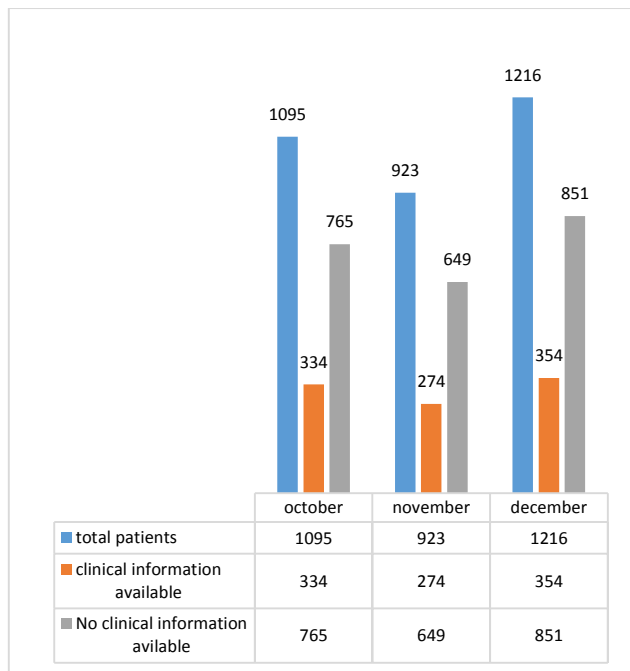


Fig-1: No. of Patients and clinical information

With statistical analysis it is noticeable that large number of patients were referred without clinical information and as total number of patients increased which led to increased influx of patients without proper referral containing no clinical information. Early detection is crucial. Therefore, it is crucial to make the proper diagnoses and treat patients, as well as to refer patients to the appropriate departments for further care. The three main steps are patient history, physical examination, and laboratory tests, however they are not always accurate or specific enough to determine a diagnosis.

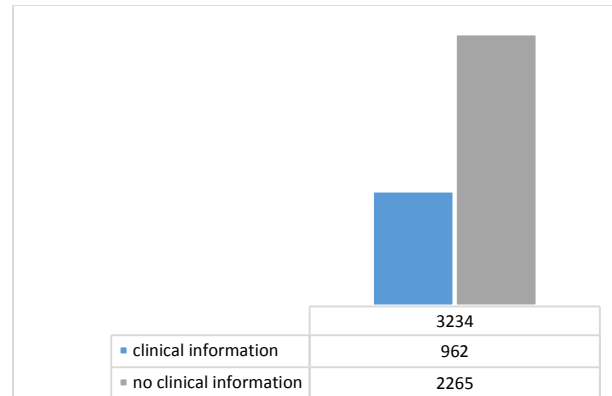


Fig-2: Clinical and Non-Clinical information

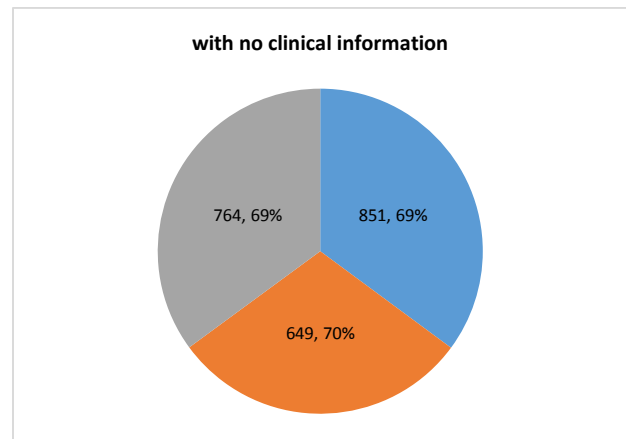


Fig-3: Without clinical information

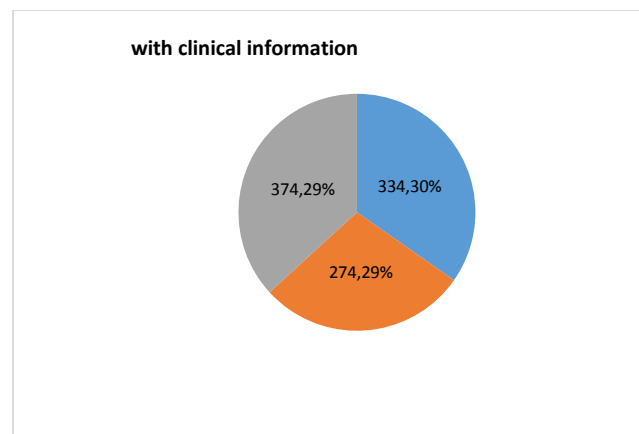


Fig-4: With Clinical Information

Table-1: Statistics data of Patients with and without clinical Information

Months	Total patients	With clinical information	Without clinical information
October	1095	334(30%)	765(69.8%)
November	923	274(29.6%)	649(70.3%)
December	1216	354(28.8%)	851(83.27%)
Total	3234	962(29.74%)	2265(70.03%)

In table-1 Patients with and without clinical Information were presented in October, November and December, (1095, 923, 1216) total patients (3234) showed clinical information 334(30%), 274 (29.6%), 354 (28.8%), 962 (29.74%) and without clinical

information 765(69.8%), 649(70.3%), 851(83.27%) total 2265(70.03%) were found respectively.

DISCUSSION

In the modern world, dependence on radiological investigations is growing day by day. In all radiological investigations, ultrasound in particular is the modality which is overburdened by all the medical specialities and is used for clinical work as the first line of imaging investigation^{16,18}.

Ultrasound examination is usually performed to obtain information necessary for diagnosis, differentiate between diseases and course or extent of disease. It is an effective technique and used as first line in imaging investigation for clinical work –up. With improved technology, ultrasound equipment has become smart, accessible, affordable and easily available^{5,7}.

As per normal procedure, clinicians usually refer patients for ultrasound examination but it is observed that self-referral by patients is a routine. For every referral there is standard format which must be followed and it is in the written and printed form which is available at the appointment desk or electronically available^{6,8,9,11,13}.

Referral forms must contain few prerequisites which are 1) identity of patient, 2) identity of referrer, 3) sufficient clinical information which includes working diagnoses, 4) differential diagnosis, 5) working provisional diagnosis, confirmed diagnosis for specific information required in further management, 6) an indication or a clinical question stated in adequate language and considered by referrer and radiologist. Referral for imaging investigation is the way of communication between referrers and radiologist which is necessary for the better care of patient^{13,16,17}.

The world over, multiple organizations are producing Diagnostic Imaging Referrals Guidelines (DIRGs). These include Royal College of Radiologist (RCR), American College of Radiology (ACR), Societe Francaise de Radiology (SFR), Diagnostic Imaging Pathways (DIP) and Canadian Association of Radiologists (CAR). To improve the effectiveness of Diagnostic Imaging Referrals Guidelines, a robust software is developed and it is integrated into computerized data entry system, which provides a decision support system to the physicians as part of their daily work flow^{5,14,19,23}.

These guidelines are very important for advice of appropriate radiological investigation and referral.¹ Guidelines help referrer in decision making when in doubt. These are evidence-based guidelines to assist referring physician and other providers in making the most appropriate imaging decision for specific clinical condition⁴. These guidelines help referrer and providers to boost quality of care and contribute to most efficient use of radiological imaging^{11,15}.

In the world of today, medicine is mostly evidence based. It is built around the goal of patient care and safety. To achieve this goal, effective communication and team work is a critical component among health care professionals⁹. Communication is also a key factor for diagnostic imaging. When appropriate imaging, with proper clinical information, is conveyed and results in timely performed appropriate study, it helps in reaching proper treatment decisions. Referral is the prime way of communication among the referrer and the radiologist^{11,18}. A standard referral for imaging must include identity of patient, identity of referrer, sufficient clinical detail for justification of imaging examination and to confirm appropriate choice of the examination and modality^{16,21}. Clinical information provided in referral, typically contains some of the following categories of diagnostic questions which are; 1) working diagnosis (for confirmation of diagnosis), 2) differential diagnosis (selection of one of the condition), 3) diagnosis of exclusion, 4) working or provisional diagnosis for further clarification, 5) confirmed diagnosis for specific information required in further management, 6) an indication or clinical question stated in adequate language and considered by referrer and clinical radiologist. If the clinical details provided in the referral request form, meet at least some of these criteria, it is more likely

that referral for imaging examination would accomplish the threshold for clinical justification^{4,8,18,19}.

In modern world ultrasound is performed by trained health workers who are known as sonographers²¹. In Pakistan this is not a trend but radiologist does the work and are very much overburdened as unorthodox referrals are more usual which lead to unnecessary examination. Pakistan being a third world country with poor socio-economic status of large population lead the way for easy and available approach for the solution of their diseases¹⁷. Ultrasound being a smart, easily available and affordable modality has become jack of all trades²⁰. This mentality is causing exhaustion of radiologists and overburdened the radiology department which lead to inattentiveness to-wards needy and deserving patients which require time and precision for their examination^{2,3,5,6,9}. The non-availability of the clinical information in referral makes it more difficult to avoid the inevitable^{1,15}.

Our study points out that the most important part of referral, which is clinical information, is lacking in most of referrals for ultrasound of abdomen at Outdoor Patient Department, in quite large numbers which were 70% of all referred patients^{20,21,23}. This leads to unnecessary overburdening and over use of the modality, which causes fatigue among radiologists. As ultrasound is operator depended, such overburdening affects the professionalism and skills with interpretation^{11,13,17,20}. This also increases the number of repeat scans leading to discomfort of patients, as well as attendant, as they will have to keep coming back. In an age of intolerance and increasing violence against health professionals, this routine may lead to stressed environment, arguments and abusive language being used for the medical professionals^{1,10,21}.

This grim situation can be avoided easily, by inclusion of to the point and specific clinical questions in referral as clinical information. This specification will help the radiologist to justify the imaging or alter the imaging technique accordingly, to avoid unbearable consequences^{12,13,18}.

CONCLUSION

Standard Referral is a method of communication in Diagnostic Imaging between referrer and radiologist which must contain specific clinical information. Communication is the key for good patient care and safety, which is the primary aim of health care system. Ultrasound as an imaging modality, which is taken as first line of investigation, is in dire need of efficient referral, which must contain specific clinical information to avoid mishaps, patient discomfort, repeat scan and departmental exhaustion. It is strongly recommended that regular workshops should be held for physician, to enlighten them regarding the importance of standard referral with clinical information, to avoid inconvenience to patients and improve the working environment for radiologist.

Acknowledgements: We acknowledge all concerned persons due to their support the current study was possible.

Conflict of Interest: The author reports no conflicts of interest in this study.

Funding: No external funding was received for the research.

Authors Contribution: Every author contributed in the present study and due to their fruitful work research was successfully conducted.

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