



A qualitative study about false perceptions of patient towards the magnetic resonance imaging equipment in radiology department

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Abstract

Purpose: The aim is to assess the False Perceptions of Patient's towards the Magnetic Resonance Imaging equipment in Radiology department.

Methodology: A prospective study was conducted by making objective type questionnaire and filled it by patients which underwent MRI scan.

Result: At the end of study, following results were observed for the first question out of 80 only 13 (16%) patients underwent repeated or more than once in MRI scan rest 67 (84%) were undergoing MRI scan for the first time to. The second question was about the level of anxiety results were in variation 35 (44%) patients feel anxiety before scan but not during scan, 28 (35%) patients feel anxiety only during scan and 17 (21%) patients do not feel anxiety before as well as after the scan as out of these 13 (16%) patients undergoing the MRI scan second time as they were familiar with MRI. For the third question whether patients have knowledge about MRI or not, it was found in observation that only 28 (35%) patients know about MRI and its advantage while rest of 52 (65%) don't know about it. For the fourth question whether MRI scan helpful to them due to lack of knowledge about MRI and they undergoing MRI scan 1st time only 28(35%) patients know that how this scan helpful to them, while rest of 52 (65%) patients undergoing MR scanning only due to prescription of doctor. For the fifth question, experience and knowledge about the sound during MRI it was observed that only 30(37.5%) patients know about this that equipment is produce sound, while 36(45%) patients have no irritation from sound during scan, and rest of 14 (17.50%) patients fear from sound during the scan. For the sixth question while patient know about the consent form it was observed that 32(40%) patients have knowledge about consent form that why it was taken, while 36 (45%) patients have no any knowledge about consent form and 12 (15%) patients have no knowledge about consent form but they were satisfied after explanation. For the seventh question whether patient aware about what to take into MRI room or not only 32 (40%) patients were know about this while rest of 48 (60%) patients don't know about this. For the eighth question assumption of patient about MRI different views were observed from patients 50 (62.5%) patients have no assumption about MRI, 9 (11%) patients think that radiation is given to me, and they were irritated with large scanning time and 21(27%) patients have other reasons.

Conclusion: At the end of study, it was concluded that most of patients underwent MRI have no knowledge about MRI due to which they have false perception about MRI, some of which as below:

- Healthy patient thinks that they stuck in MRI bore
- Patients think to run out from the MRI bore
- Feeling scared during scanning due to table movement
- Patients thinks that MRI scanning will cause harm to them

Keywords: perception, MRI, patient, informed consent

Introduction

Magnet resonance imaging is a radiology technique that uses magnetism, radio waves and a computer to produce images of body structures. MRI is based on the principle of NMR. In 1997 the first MRI exam was performed on human being. It took 5 hours to produce one image^[1].

Four basic steps are involved to produce MRI image

- Placing the patient in the magnet.
- Sending RF pulse by coil.

- Receiving signals from the patient by coil.
- Transformation of signals into image by a process in the computer.

History

The history of MRI is one of a long relation between physics and medicine. In 1946 Felix Bloch at Stanford and Edward Purcell at Harvard University independently described the NMR in a solid. They shared the 1950 noble prize in physics for this work. The

turning point comes after 20 years with the discovery of computer in medical imaging. By this time the word nuclear is substituted and it is known as magnetic resonance imaging. Bloch continued studies with NMR of water. Bloch proposed that nucleus behaves like a small magnet. NMR is not an imaging technique but rather a method to provide spectroscopic data concerning a sample placed in device. In the early 1970 Damadian first showed that malignant tissues have a different NMR spectrum from that of normal tissues. MRI is a modality which gives the minute information of body structures. At this time Pal C Lauterbur was engaged in similar research of clinical [2]. Perhaps one of the most exciting developments of these was the advent of superconductors. These superconductors make the strong magnetic fields used in MRIs possible. Due to all of these technologies required, the first human being MRI examination did not occur until 1977. Since then, faster computing has made the MRI process much faster. The most significant advancement in MRIs occurred in 2003, when the Nobel Prize was won by Paul C. Lauterbur and Peter Mansfield for their discoveries of using MRIs as a diagnostic tool [3].



Edward Mills Purcell



Raymond Damadian

Some items, including certain cardiac pacemakers, Implantable defibrillator, neuro stimulation systems, cochlear implants, and medication pumps are acceptable for MRI. However, the MRI technologist and radiologist must know the exact type that you have in order to follow special procedures to ensure your safety [4]. Therefore, in order to help with the pre-MRI screening procedure, it is important for you to obtain information about any implant that you may have and to provide it to the MRI technologist. Because this can also be a concern of anxiety and cause of harm to patient which results in false perception of patient.

Causes of false perception of patient to MRI equipment-

- The behavior of radiographer is not good towards the patient.
- Proper counseling of the patient is not done by the radiographer.
- The patient is in discomfort during examination due to improper positioning during examination.
- Due to sound of MRI during scanning.
- Some patient is claustrophobic during MRI examination.

Corrective method to false perception of patient to MRI equipment.

- The behavior of radiographer is good to the patient. Proper counseling of patient is done by the radiographer.
- The patient is in comfort during examination due to proper positioning.
- To reduce the sound of MRI during scanning by using the immobilization devices.
- With the proper counseling of patient, the claustrophobic patient can under goes to MRI examination.

AIM

Aim of the study is to assess about False Perceptions of Patient towards the Magnetic Resonance Imaging equipment in radiology department.

- To aware that MRI is not harmful to them
- It will help in diagnosis of problem
- So that they can undergo treatment process to get cure.

Methodology

A prospective study was conducted by making objective type questionnaire and filled it by patients which underwent MRI scan. During the study on 80 patients under went MRI and their perception about MRI was assessed by asking multiple questions about MRI before as well as after the scanning to know their experience and to gather information about false perceptions of patient, which may or may not be clarified after the MRI examination performed.

Some questions were asked from each patient as they are as follows (in Table1)

Table 1: Sample Questionnaire

S. No.	Sample questionaaire	Options	
		Yes	No
1	Whether patient undergo MRI scan before		
2	Level of anxiety of patient before during and after the scan was completed		
3	Have you any knowledge about MRI		

4	Was MRI helpful to you		
5	Experience and knowledge of patients about the sound during scan		
6	Knowledge of patient about consent form		
7	Knowledge about the prohibited items to MRI room		
8	Patient assumption about MRI		
9	Any other:		

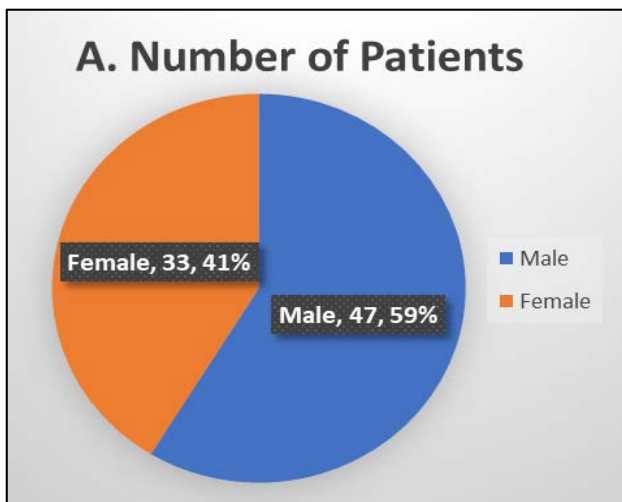
Inclusion criteria

- Patients undergo MRI
- OPD patients
- Patients undergo MRI scan first time
- IPD patients (Co-operative)

Exclusion Criteria

- Patients undergo repeat procedure
- Emergency patients
- Patients with metallic implants (Non-MR Compatible)
- Claustrophobic Patients
- Pediatric patients (having age less than 10 yrs.)
- Old patients (Having age more than 80 yrs.)
- Unconscious Patients
- Patients having more than one scan considered only once.

Sample Size: During the study data collected on the regular basis from 80 patients, first the purpose of filling of questionnaire explained to them and after that on their own choice whether they want to participate or not data was collected. (As shown in graph A below).

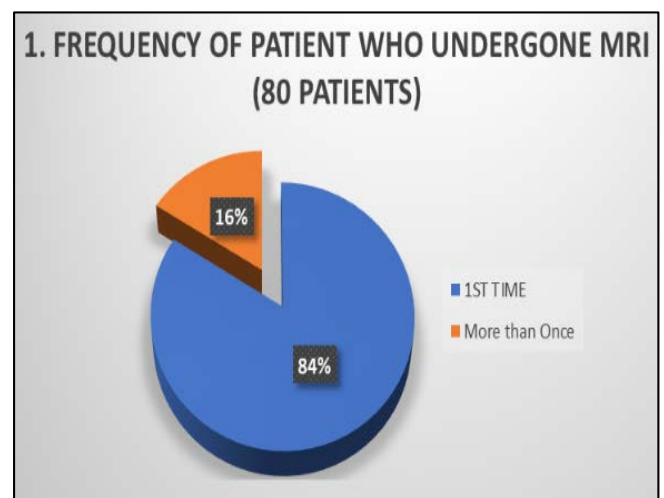


Graph A: Distribution of number of patient’s data used in this study

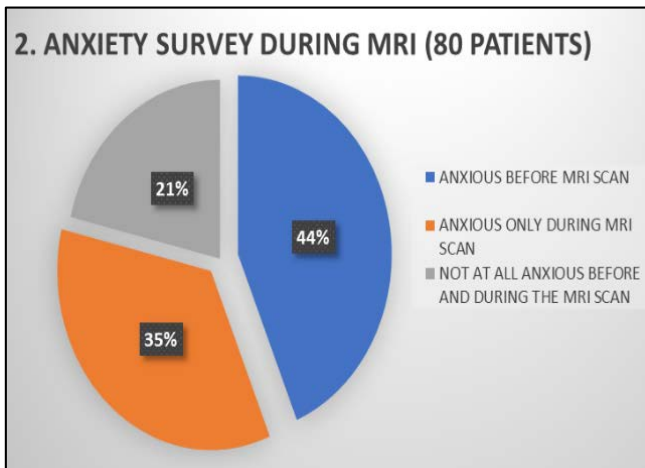
Result

In this study questionnaire is filled by total 80 patients undergo MRI scan out of which 33 were female and 47 were male patients. At the end of study after analysis following results were observed for the first question out of 80 only 13 (16%) patients underwent repeated or more than once in MRI scan rest 67 (84%) were undergoing MRI scan for the first time to. The second question was about the level of anxiety results were in variation 35 (44%) patients feel anxiety before scan but not during scan, 28 (35%) patients feel anxiety only during scan and 17 (21%) patients do

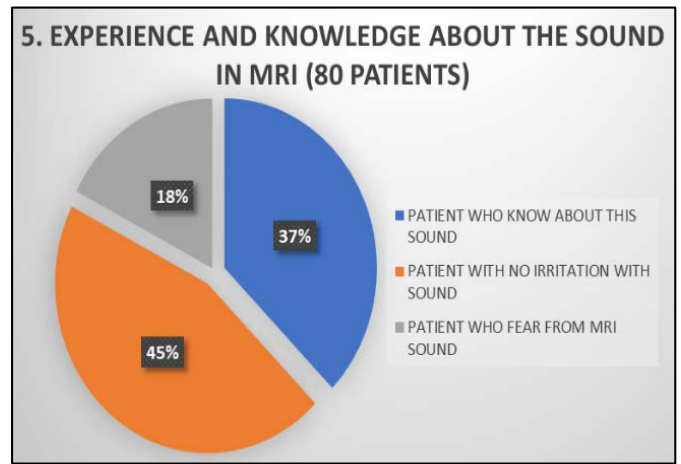
not feel anxiety before as well as after the scan as out of these 13 (16%) patients undergoing the MRI scan second time as they were familiar with MRI. For the third question whether patients have knowledge about MRI or not, it was found in observation that only 28 (35%) patients know about MRI and its advantage while rest of 52 (65%) don’t know about it. For the fourth question whether MRI scan helpful to them due to lack of knowledge about MRI and they undergoing MRI scan 1st time only 28(35%) patients know that how this scan helpful to them, while rest of 52 (65%) patients undergoing MR scanning only due to prescription of doctor. For the fifth question experience and knowledge about the sound during MRI it was observed that only 30(37.5%) patients know about this that equipment is produce sound, while 36(45%) patients have no irritation from sound during scan, and rest of 14 (17.50%) patients fear from sound during the scan. For the sixth question while patient know about the consent form it was observed that 32(40%) patients have knowledge about consent form that why it was taken, while 36 (45%) patients have no any knowledge about consent form and 12 (15%) patients have no knowledge about consent form but they were satisfied after explanation. For the seventh question whether patient aware about what to take into MRI room or not only 32 (40%) patients were know about this while rest of 48 (60%) patients don’t know about this. For the eighth question assumption of patient about MRI different views were observed from patients 50 (62.5%) patients have no assumption about MRI, 9 (11%) patients think that radiation is given to me, Patient is irritated with large scanning time and 21(27%) patients have other reasons.



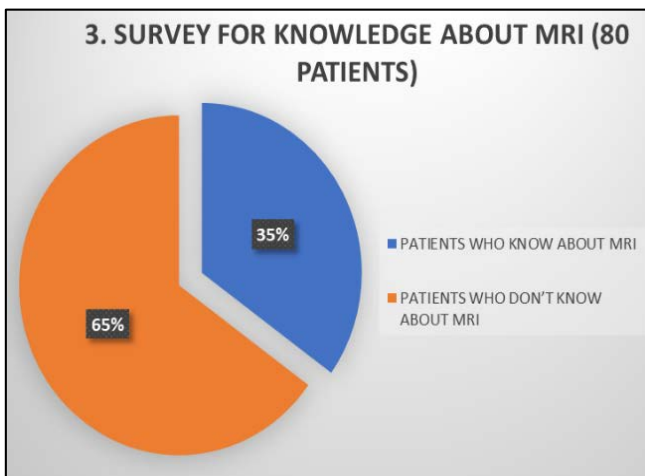
Graph 1: Number of patients undergo MRI



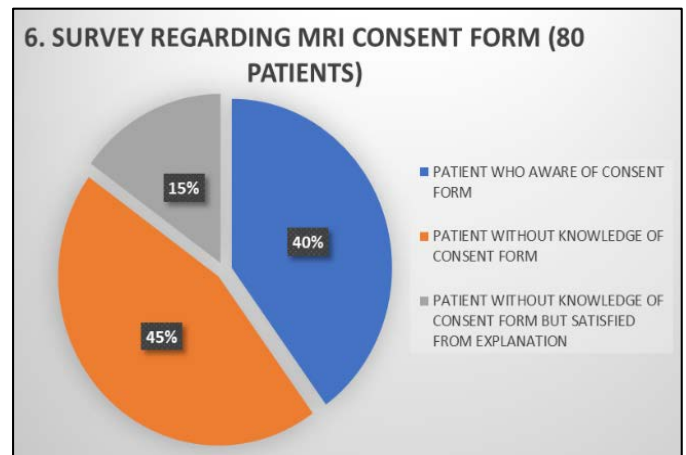
Graph 2: Distribution of patients feels anxiety before, during and after the scan



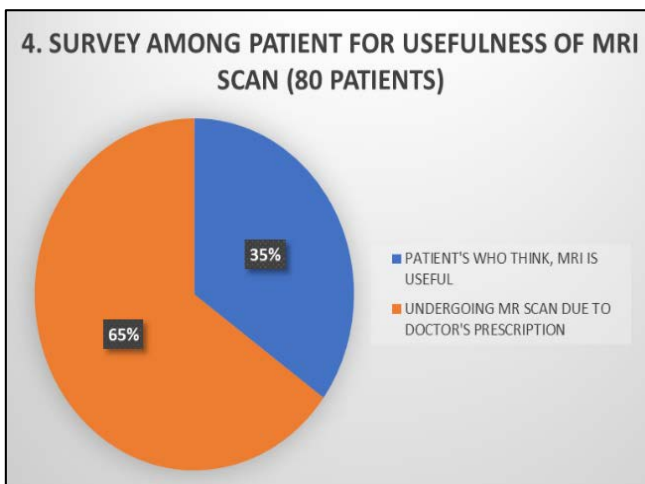
Graph 5: Distribution of patient's data who have knowledge about the sound during MRI



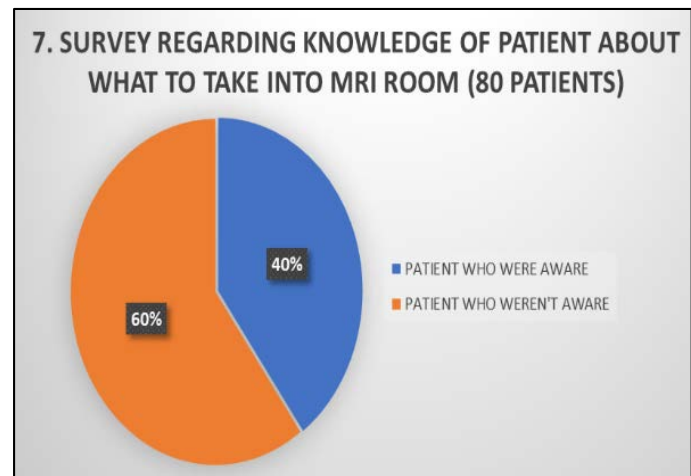
Graph 3: Distribution of patient's knowledge about MRI equipment



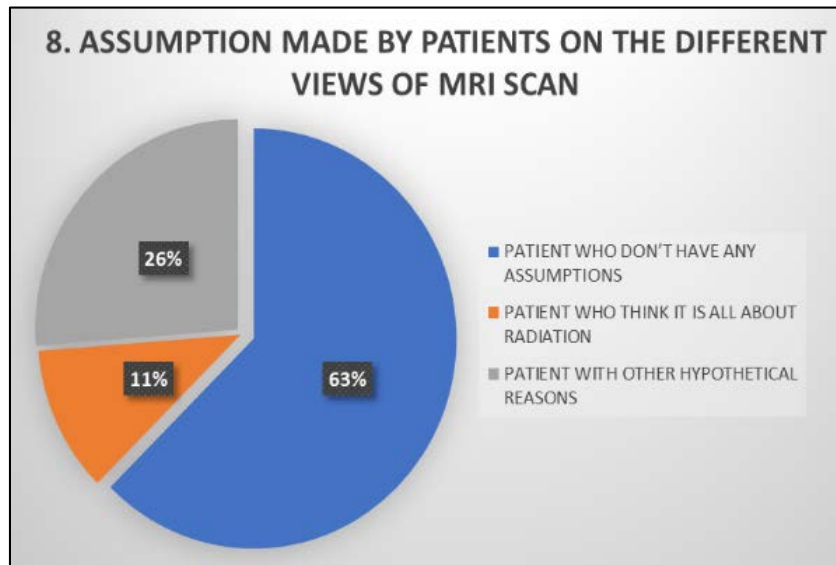
Graph 6: Distribution of patient's data who have knowledge about the Consent form before MRI scan



Graph 4: Distribution of patient's data who have knowledge about usefulness of MRI



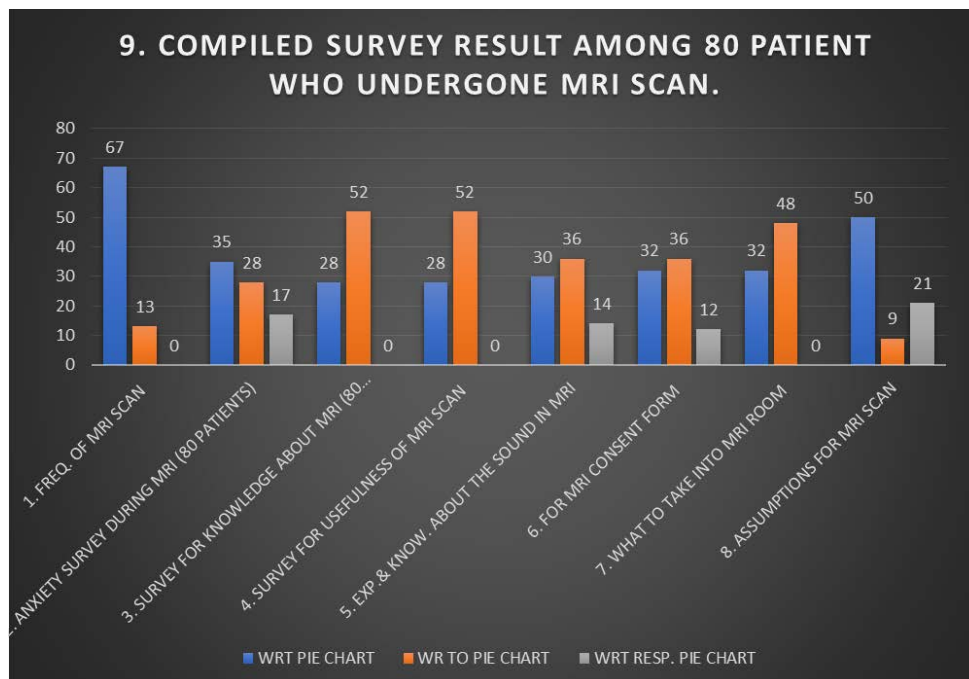
Graph 7: Knowledge of patients about the things restricted to take in MRI room



Graph 8: Assumption of patients regards MRI scan and MRI equipment

Table 2: Following results were observed after filling of questionnaire by 80 patients underwent MRI

S. No.	Questions	Result in %age	
		YES	NO
1	Whether patient undergo MRI scan before	13	67
2	Level of anxiety of patient before during and after the scan was completed	35(Before scan) 28 (During Scan)	17
3	Have you any knowledge about MRI	28	52
4	Was MRI helpful to you	28	52
5	Experience and knowledge of patients about the sound during scan	30+36=66 Aware about sound	14 (Feels Fear due to sound during scan)
6	Knowledge of patient about consent form	32	36+12 = 48
7	Knowledge about the prohibited items to MRI room	32	48
8	Patient assumption about MRI	9+21=30	50
9	Any other		



Graph 9: Graphical distribution of data observed.

Conclusion

At the end of study, it was concluded that most of patients underwent MRI have no knowledge about MRI due to which they have false perception about MRI, some of which as below:

- Healthy patient thinks that they stuck in MRI bore
- Patients think to run out from the MRI bore
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Contributors

All authors contributed to the conception or design of the work, the acquisition, analysis, or interpretation of the data. All authors were involved in drafting and commenting on the paper and have approved the final version.

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Conflict of Interest

The author has no conflict of interest.

Disclosure

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