

# EFFECT OF MEDICAL EDUCATION ON THE MORAL COMPETENCE OF MEDICAL STUDENTS

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**Abstract:** The aim of the present study is to investigate the effect of medical education on moral competence of medical students. It is hypothesized that there will be a significant effect of medical education on moral competence of medical students. 200 (N) students chosen for this study are first and final year Bachelors of Medicine, Bachelors of Surgery (MBBS) from public and private medical universities of Karachi, Pakistan. Moral Competence test by Lind (2015) is used to measure the C Score. Through statistical analysis of the data, it is found statistically significant ( $p < 0.05$ ) that final year medical students have low moral competence as compared to first year medical students. There is no significant effect of gender and university sector on moral competence of medical students.

**Keywords:** moral competence, medical education

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## Introduction

The field of medicine has evolved in the past centuries and is now the most famous field in terms of career and knowledge. Many philosophers contributed to the initiation of this field by introducing different methods and measures to treat and heal human body. Apollo is considered to be the founder of medical science and his son was represented as deity, whose duty was to restore man's health by means of healing oracles which included prayers, fasting and ablutions through mediation of the priest in pre-Hippocratic times. Franz Friedrich Anton Mesmer (1734-1815), a German physician, proposed that a magnetic power occurs within the body which he first tried to detect by means of magnets and then by stroking body to cause an interchange of forces or cure. By his work, he was able to encourage hypnotic sleep at some occasions. Samuel Hahnemann (1755-1843), a German physician, introduced Homeopathy. (Knight, 2014).

According to Renouard (1867), in his book "History of Medicine from Its Origin to the Nineteenth Century", the music and dance were considered as the forms of art of healing.

In a study, contemporary healing practices are discussed where traditional "Navajo" healers practiced sand painting as a technique that helped patients in making sense of their illnesses and providing the direction to their lives. These traditional practices are being revived because of unsatisfied patient's attitude towards new methods of treatment (Schneider & DeHaven, 2003).

In Egypt, Imhotep was the first known physician and medical institutions which were established in Egypt referred as "houses of life". The concepts of diagnosis, prognosis, physical examination and medical prescriptions were introduced by Babylonians in first half of the 2nd millennium BCE. Many other therapies emerged in post- Vedic-India as a traditional medicine system called Ayurveda, which means "complete knowledge for long life" in the first millennium BCE. These were based on combination of herbal practices in past centuries, new therapies and community thinkers which included Buddha and others. In Cnidus 700 BCE, Alcmaeon worked in the first Greek medical school. At this school, taking observations of patients started. Ancient Greeks also introduced a medicine system called *Humorism* for the treatment of imbalanced humors in the body. Temples and shrines were considered as center of medical advice and healing in which patients were led to a dream like state sleep "koimesis" and there they were guided or cured by deity in the dream (Crabben, 2011).

Hippocrates (460-370 BC), father of medicine, a Greek physician who laid the basis of rational method to medicine. He was the one who introduced Hippocratic Oath, which is still in use by doctors (Crabben).

With time, people became more interested in health concerns with reference to scientific perspective. There was a time period from 661 to 750 AD when people sought treatment for every illness from god. In 900 AD there was a rise in advancement of medical system towards science through the growth of Islam. Muhammad Ibn Zakariya Razi (Al- Razi) is known as “the father of pediatrics” (Medical News Today, 2012).

Al Razi (854-925 AD) wrote on medical ethics; "*The doctor's aim is to do good, even to our enemies, so much more to our friends, and my profession forbids us to do harm to our kindred, as it is instituted for the benefit and welfare of the human race, and God imposed on physicians the oath not to compose mortiferous remedies.*" (Medical News Today, 2012)

Ibn Sina or Avicenna (980-1037 AD) also contributed in the field of medicine. His book named “The Canon of Medicine” sets the criteria for medicine in both Islamic and European world. (Medical News Today, 2012).

Ibn al – Nafī (1213-1288 AD) believed he did not like dissecting human corpses for compassion of human body and the code of law in Islam (*shari'a*) so he did his researches on animals. Islamic society built hospitals called Bimaristan (House of sick). They used opium to induce sleep before carrying out surgeries as no proper anesthetics were available.

In the Christian doctrine of signature, the monks declared that god had given a cure for every disease. Considering the example of some seeds which looked like miniature skulls, were supposed to treat headaches. According to Hugh of Luca (1160-1257), it was also believed that wine was an effective antiseptic and can be used for washing wounds to avoid further infection. He also believed that pus was not a good sign for health unlike others who saw it as a positive sign for body getting rid of toxins in blood. Medieval surgeons used some substances as anesthetics which were: mandrake roots, opium, gall of boar, and hemlock. A method called trepanning was used to deal with neurological disorders such as epilepsy to let demons out by drilling holes in skulls of patients (Medical News Today, 2012).

Throughout the historical journey of medical field, technological changes with time led to advance development in medical procedures. Many people contributed in this field by sterilizing of surgical instruments, introducing Aspirin, treatment for syphilis, and initiating the idea of chemotherapy. Laparoscopy (a procedure to examine abdominal cavity via small incision) was performed for the first time in 1910 by Olier (1650-1701). These advancements led to going deep in body through surgeries where first open heart surgery was done by John Heysham Gibbon (1903-1973) through heart-lung machine. Many devices like implantable pace-maker, electrocardiogram and electroencephalography were also introduced.

A Chinese American reproductive biologist Chang (1908-1991) introduced test tube baby concept in 1959. In 1985, a technique for DNA fingerprinting and profiling developed by Jeffreys which is now used very competently in forensics. Medical field advanced by inventing first artificial liver, a bionic eye to provide visual function to blind patients and other therapies for cancer patients than chemotherapy and radiation therapy (Medical News Today, 2012).

As there was gradual increase in technological advancements, there was a decrease in moral values as reported in an article published in the British Medical Journal in 2001. The medical students were surveyed at the end of first clinical year in university of Toronto (Hicks, Lin, Robertson, Robinson and Woodrow, 2001). The results showed three categories of ethical dilemmas for these students. Krug & Kavanagh states these three dilemmas in categories.

(1) Conflict between medical education and patient's care, (2) responsibility exceeding student's capabilities, and (3) involvement in care perceived to be substandard. The ethical dilemmas during clinical years arises from the reality that they want to become competent physicians , have good evaluations on their training tests and desire to use their knowledge for helping others. It also arises from being in the lowest level of authority in the medical team (Krug & Kavanagh, 2014).

It was mentioned in a research about studies showing little progress in the moral maturity among the medical students as compared to their peers in other settings (Branch, 2000). From one survey of medical students, it was evident that majority of medical students feel that their moral values are worn out during the clinical years (Self & Baldwin 1994). A study also showed abuse on medical students done by those who were at higher positions of power than them (Sheehan, Sheehan, White, Leibowitz & Baldwin , 1990).

The expected qualities of medical staff includes: professionalism, having high moral character, motivation of institutes to care about ethical development of medical students during their training and medical education (Johane, Niyonsenga& Fafard, 2003). New technologies and economic changes show vast moral challenges to medical workers and decision makers that are indicated by numbers of criminal offenses in this field (Lind, 1997).

With the duty associated with profession of doctor in aiming to help patient relieve their sufferings, the doctors rarely focus on the moral implications of their everyday clinical work in handling patients. The doctors follow very rigid patterns across specialties. It shows how they overlook the existential meanings of patients and focus only on patient's functioning which now has become an integral part of clinical practice. The values of doctor's conscious moral evaluations are questioned by this study (Agledahl, Forde & Wifstad, 2010).

To understand the word moral competence, first we need to understand the term competence. Usually the term competence is used in everyday language without being accurately defined or differentiated. Competence is understood as a roughly specialized system of abilities, proficiencies, and skills that are necessary to reach certain tasks or goals (Weinert, 2001).

Moral competence refers to an affective orientation, to act upon selfless behaviors towards others and the capability to judge moral issues sensibly. It is proposed that moral competence consists of four broad components: 1) a system of norms, language and concepts to communicate about these norms; 2) moral cognition and affect; 3) moral decision making and action; 4) moral communication (Malle & Matthias, 2014).

Moral psychology explores human's performances in moral contexts. It is a field of study of both fundamental and practical life interest where different factors of moral judgment along with behaviors are revealed and understood. This eventually would help in recognizing which policies and educational interventions may aid good conduct and improve bad conduct.

At Hashemite University, findings of a research showed that the average level of moral competence is found in the students, though the significant difference was found based on gender, academic level and performance (Mahasneh, 2013). It helped in making academic plans for the student to be morally competent.

Post-Critical Belief scale and Moral Judgment Test were used to find the relationship between Religiosity, Moral Attitudes and Moral Competence. Sample shows that literal verses symbolic dimensions have significant relationship, but there is no relationship between religiosity and moral competence by Duriez (1991; 1997).

Slovackova and Slovacek (2007) states that it is not a good sign that moral judgement decreases due to age and number of semesters studied. It indicates that lower number semester students were morally more competent than the higher number semester students. Murrell (2014) study showed lack of evolution in the moral reasoning of medical students and raised the issue of what can strengthen positive changes in moral judgment during the

medical school experience. A cohort study by Patenaude and Fafard (2003) was done on changes in student's moral development during medical school. The overall mean change in average scores demonstrates a significant decline in moral development.

In Pakistan, Liaquat (2012) found in research of dogmatic religiosity and educational environment on moral judgment competence of university, college and *madrasah* students. Slight increase was observed in moral competence with educational environment, which also showed that educational environment had little negative effect on moral competence while moral segmentation was reduced. Other findings showed that *madarris* had very low moral competence as compare to college and university students.

Haque, Mudassira, Khan, Ahmed, Hashmi and Naseem (2006) conducted a research on current medical curriculum and teaching strategies in the view of students. The results highlighted the need to introduce problem based learning, short questions for assessments, a regular feedback to the teachers regarding how they teach and discuss the students' and teacher's short comings.

The medical teams were found by medical students as distant, less empathic and uncaring towards their patients (Christakis &Feudtner, 1993). The study showed that many students were reluctant to perform tests or procedures on the patients who were dying and might not get benefit from them (Branch, 2000). The medical students who cannot question authority due to power and conforming to them for their evaluation bases might feel guilty and weak because on deeper moral level they failed in the basic responsibility of taking care of patients (Branch, 2000). These dilemmas can hinder the process of medical education and create problems in their long run career.

### **Theoretical background**

Jean William Fritz Piaget has contributed in moral psychology through his article "Moral Judgment of the Child", where he discussed about the cognitive-structural aspects of the behavior, that there are structures exist in the mind which can be discover through expressed regular responses (Piaget, 1971). By discovering those structures can help to understand the reasons behind the behavior.

Lawrence Kohlberg was inspired by Piaget's work, he used Piaget's set of general cognitive growth, moral development stages and expanded his work. Lawrence Kohlberg came up with his stages of moral development.

He explained that moral development takes place in three levels, pre-conventional, conventional and post conventional. He gave details that when we gradually move forward through these stages in life, we get to decide which behavior is right and which is not. It changes from approval of the people to one's own principles and values. Lawrence Kohlberg came up with the theory of Moral Development and its stages (Kohlberg, 1973).

These 3 stages are further divided into 2 sub stages which are mentioned below:

#### 1) Pre-Conventional stage

i. The Punishment and Obedience orientation

ii. The Instrumental Relativist orientation

#### 2) Conventional stage

i. The Interpersonal Concordance or "Good Boy-Nice Girl" orientation

ii. The Law and Order orientation

3) Post-Conventional stage

i. The Social-Contract orientation

ii. The Universal Ethical Principle

There are indications that only few individuals can reach to the last stage of Post-Convention (Kohlberg, 1980).

Based on theory by Jean Piaget, now named as Dual Aspect Model, which suggests that the moral behavior has two aspects, Affective and Cognitive. The moral competence is the cognitive aspect (rational part) of it. One of the innermost postulates of Piaget's new approach is that these two aspects (affective and cognitive) are at the same time inseparable and irreducible (Piaget & Inhelder, 1969, p. 158).

In many writings, he seems to be connecting the both aspects very closely, that these two go parallel with each other. *"There is a remarkable parallelism found between both"* (Piaget and Inhelder, 1969). According to him, not only these two are functionally parallel but developmentally too. Lawrence Kohlberg also stressed the cognitive part of moral understanding as the higher levels of moral development require higher cognitive development (Lind, 2013).

Moral Competence is defined as

*"The capacity to make decisions and judgments which are moral (based on internal principles) and to act in accordance with such judgments"* (Kohlberg, 1964).

According to Kohlberg's evaluation, moral decisions of a person are based on the quality of reasoning (rationality). The thinking process used by some in stage 6 to decide what is fair and reasonable in a moral dilemma is called "second-order golden rule role taking" (Kohlberg, 1984). It involves the two steps: understanding how a person sees the situation and when they imagine how they would have reacted or feel when placed in another person's situation.

### ***Certification of Medical Students***

Medicine was the first profession in which license was made necessary. In 1930, for admission in medical schools, 3 to 4 years graded curriculum and liberal art degree was required. It was also required to have 1-year internship experience in a hospital setting after receiving a degree from recognized medical school for the licensure to practice of medicine. The doctors of medicine (MDs) are found in both, private practices and public health organizations. The licensing process takes place at state level according to their specific laws. Certification is accomplished through national organizations with reliable national requirement for minimum professional standards (Goldman & Schafer, 2011).

In the process of licensure all states require that applicants for MD licensure be graduates of an approved medical school and have completed the United States Medical Licensing Exam (USMLE) where steps 1 to 3 are executed. Steps 1 and 2 are completed while in medical school and step 3 is completed after some medical training (usually between 12 to 18 months which depends on the state). People who earned their medical degrees in other countries also must satisfy these requirements before practicing medicine in the United States. During certification process, MDs who wish to specialize must complete an additional 3 to 9 years of postgraduate work in their specialty area, then pass board certification examinations (Goldman & Schafer, 2011).

## Method

### *Participants*

The present study consisted of 200 participants who were medical students from Bachelor of Medicine, Bachelor of Surgery (MBBS). 50 students from first year and 50 from final year of public medical universities. Likewise, 50 students from first year and 50 from final year of private medical universities were included. The students who were selected for the research purpose belonged to medical universities of Karachi which are recognized by Pakistan Medical and Dental Council.

### *Materials*

Before administering the test, the participants were first requested to give their consent by signing the informed consent form. In consent form, the participants had the full right to withdraw from the research at any time without any penalty. They were assured that all their personal information will be kept confidential. The participants were also requested to go through the informed consent themselves for more assurance. For the online data collection method, the same procedure was carried out.

Demographic information form was provided to ensure that only eligible participants who fit in research criteria are catered. Participants with MBBS field from first and last year were only proceeded further for the administration of test. The demographic form included the following information: age, gender, university name and semester.

Moral Competence Test (MCT) latest version (2014) was used to measure the moral competence. The test consisted of two stories, each providing the person with behavioral dilemma. The 28 items were based on arguments in favor of and against worker and doctor's dilemma respectively based on 9 point Likert scale (-4 I strongly reject to +4 I strongly accept).

The test has two types of validities: theoretical validity and communicative validity. The traditional item analysis and test reliability are purposeless for MCT while a test shows test retest co-relation of  $r = 0.90$  (Lind, 2008).

The moral competence of the students was measured on the basis of Competence Score (C-Score) which is defined as;

*“The C- Score reflects the degree to which a person is able to make or rate judgments on the basis of (universally valid) moral principles in spite of strong counter-tendencies, e.g., the tendency to rate other people's arguments in regards to one's own opinion (Opinion agreement)”*. (Lind, 2008)

### ***Operational Definitions:***

**Moral Competence:** The ability to solve problems and conflicts on the basis of universal moral principles through thinking and discussion, but not through violence, deceit and power (Lind, 2015).

**Medical Education:** Medical education is a period of learning and training in which a student is studying Bachelors of Medicine or Bachelors of Surgery (MBBS) from a Pakistan Medical and Dental Council (PMDC) recognized medical university of Karachi.

For research criteria, year of medical education is first year and final year of Bachelors of Medicine or Bachelor of Surgery (MBBS).

### **Procedure**

Permission letters for the public and private medical universities were first signed by research supervisors then by the Director of Institute of Professional Psychology Karachi, later taken to the universities for the data collection purpose. Purposive sampling was used to select medical students from first and last year of medical universities of Karachi. Two groups of first and final year students were selected from a private and a public university each (Total of four groups).

19% of data was collected through face to face method while 81% of data was collected through online survey method. For online survey, the participants were asked to forward the form and invite their friends, who fit the criteria, to participate as well.

The questionnaire comprised of a consent form, a demographic information form and MCT test (Moral Competence Test) which consisted of two sections. Section A was about worker's dilemma and section B was about doctor's dilemma (refer to Appendix).

The MCT (Moral Competence Test) was filled by the participants and they were encouraged to ask for any query regarding the items or content of materials without any hesitation. Each participant took an average of 15-20 minutes to fill out their responses. After the completion of test, in face to face data method collection; participants were thanked for the participation and co-operation. Results were entered in the Statistical Package for Social Analysis (SPSS) software.

Competence Score (C- Score) was calculated. For statistical analysis, an independent sample T test and a sample T test along with graphical representation of variables were used to analyze the results and determine the effect of medical education on the moral competence of medical students.

### **Results**

*Table 1 Demographic Statistical Description*

Variable	Levels	F	Percentage	skewness
Gender	Male	63	31.5%	0.803
	Female	137	68.5%	
University	Private	100	50 %	0.000
	Public	100	50%	
Year	First Year	100	50%	0.000
	Final Year	100	50%	

*Table 2 Statistical Analysis of C- Score with Year of Medical Education and University Sectors among the Medical Students of Medical Universities of Karachi*

Detail	C-Score	Mean	SD	t	Df	Sig (1-tailed)
Year	First Year	16.1825	12.43974	3.108	198	0.001
	Last Year	10.8031	12.03587			
University	Private	12.1797	13.12931	-1.490	198	0.070
	Public	14.8059	11.76275			

Table 3 Statistical Analysis of C-Score of Medical Students of Medical Universities of Karachi

Detail	Mean	SD	S.E.M	t	Df	Sig (1-tailed)
C-Score (N=200)	13.4928	12.50290	0.88409	-18.671	199	0.000

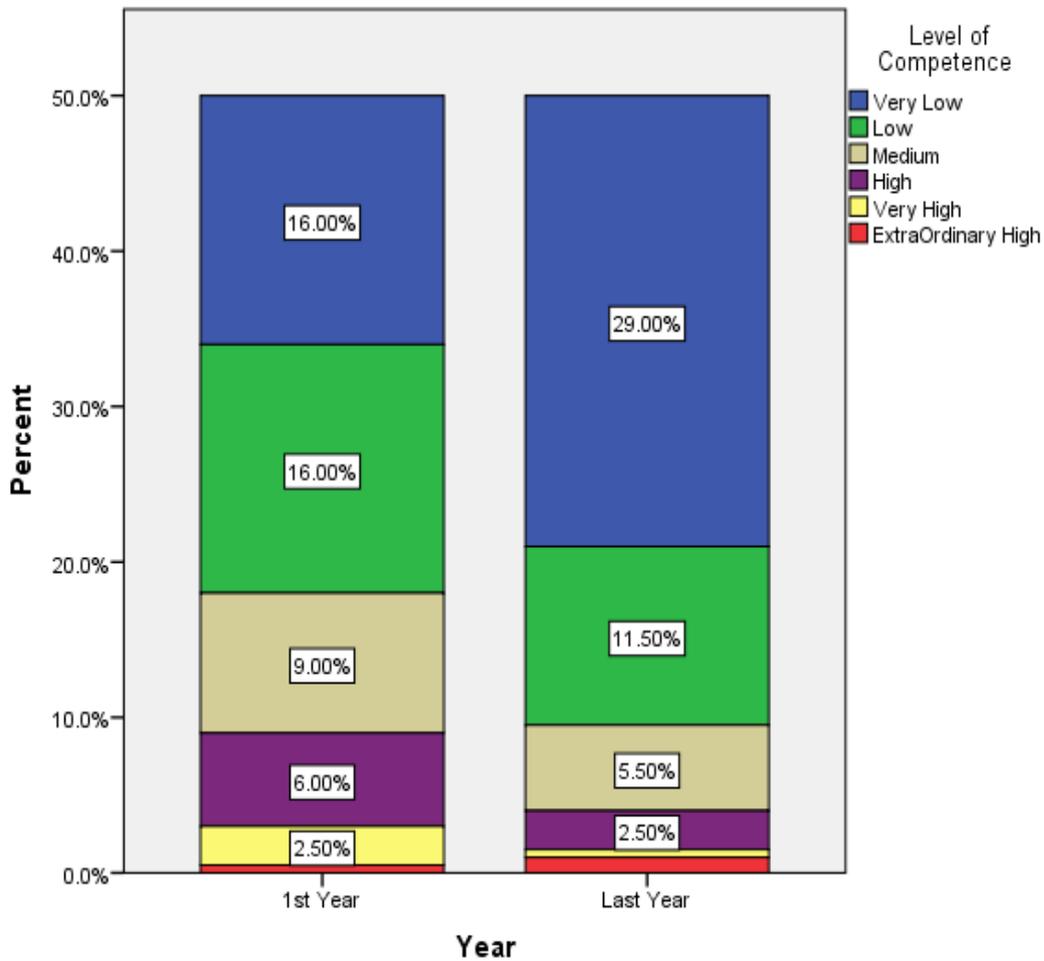


Figure 1 Shows the bar representation between level of competence and year of medical education i.e. first and final medical students of medical universities of Karachi

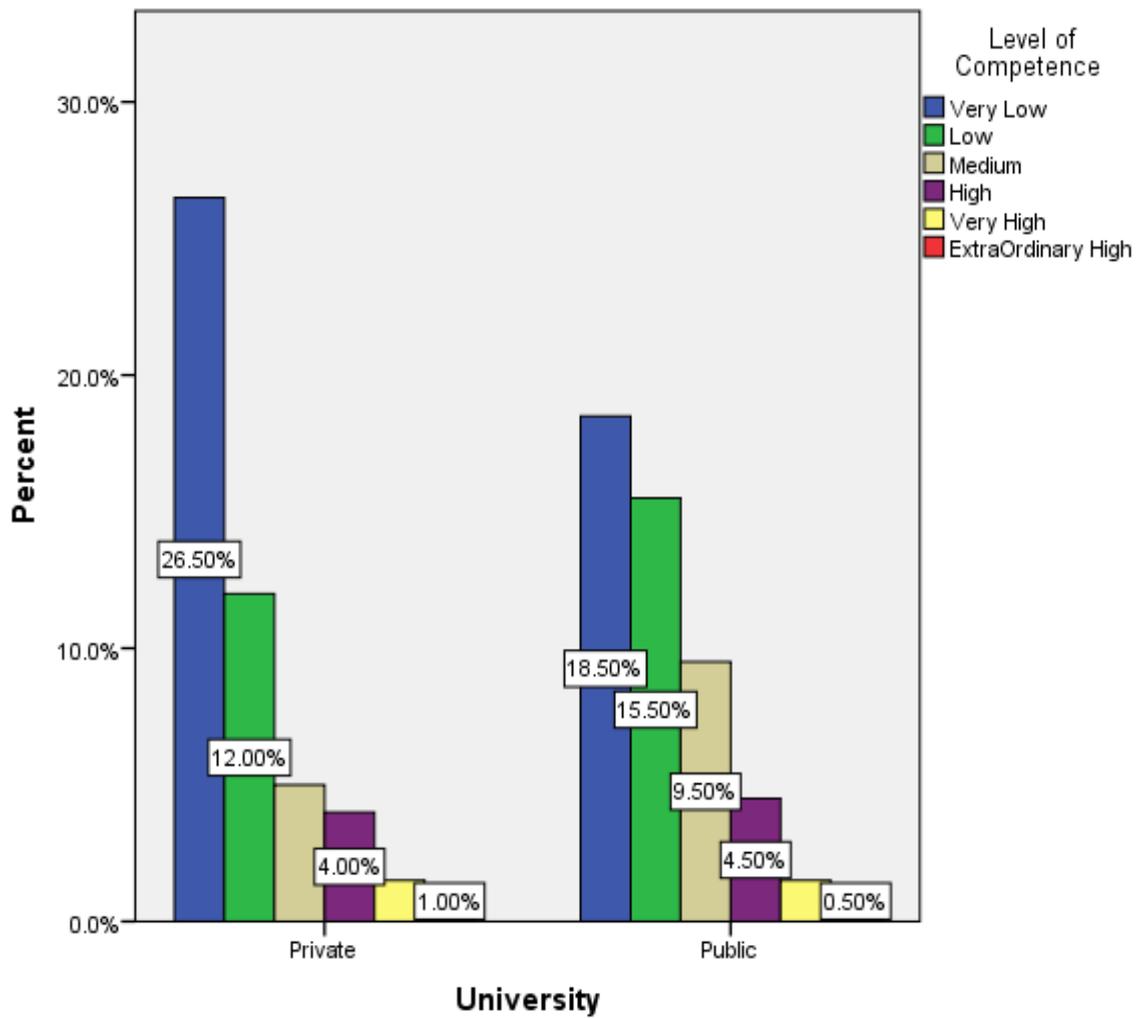


Figure 2 Shows the bar chart representation between level of Competence and university sectors i.e. private and public medical universities of Karachi

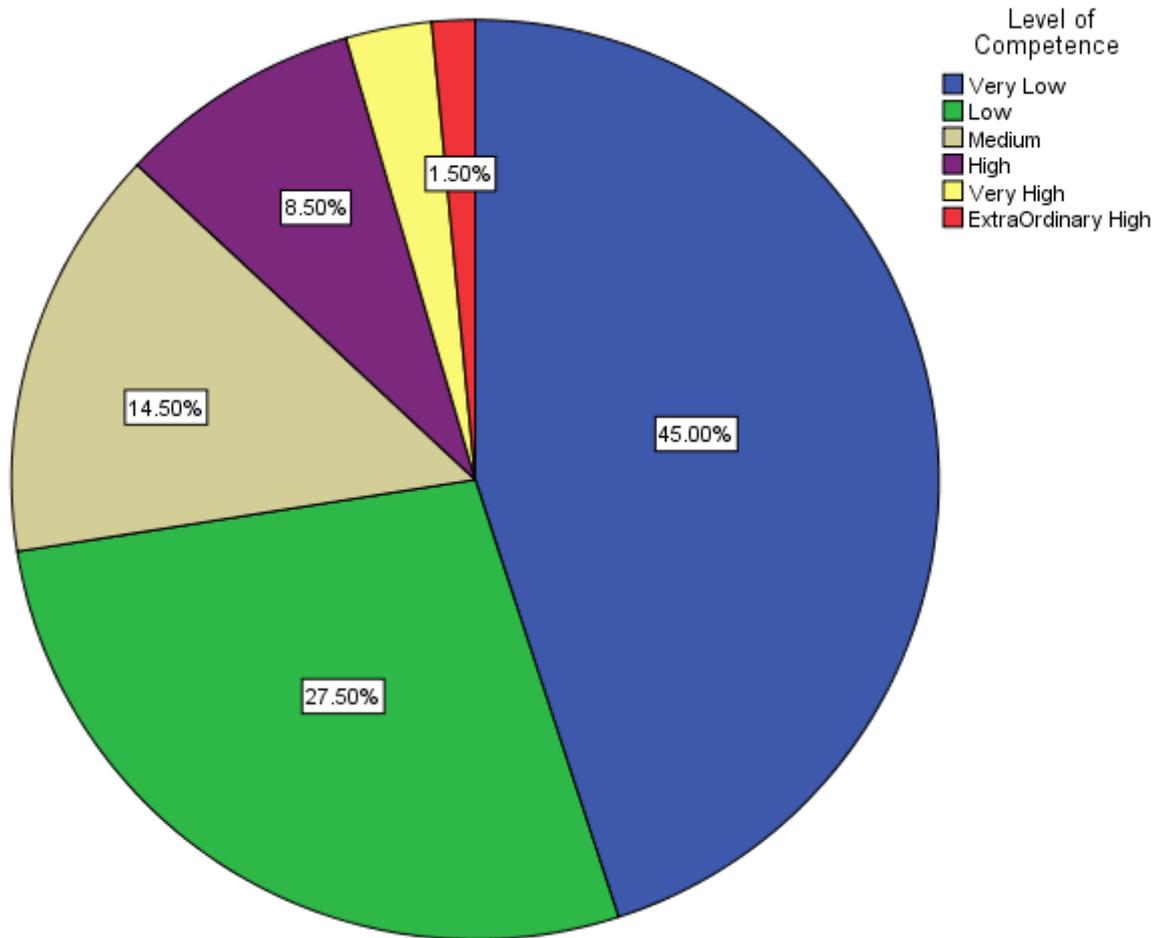


Figure 3 Shows the pie chart representation of level of Competence among medical students of medical universities of Karachi

### Discussion

The hypothesis of this research was that there would be a significant effect of medical education on the moral competence of medical students. It is normally found that moral development progresses in early adulthood but there was little change found in its development in medical students. Development of moral competence is necessary in dealing with patients, their family in future, in making important decisions and resolving that they may dilemmas that they encounter in their lives (Branch, 2000).

This study aims to check whether there is a significant difference in moral competence of first and last year medical students. In conclusion of statistical analysis, the data shows that final year medical students have low moral competence as compared to first year medical students as the hypothesis stated. This is statistically significant ( $p < 0.05$ ) as shown in table 2. The sample population of medical students is equally distributed among year of medical education and university sectors as shown in table 1.

There are no significant differences between private and public medical universities as shown in statistical analysis table 2. This indicates that education training is similar in both medical university sectors.

Lind (2000) conducted a research on moral regression in medical students and their learning environment. The results indicated that medical students prefer ethical moral reasoning like other students and this stays stable

throughout their study. It was also revealed that at average level, medical students showed regression in the *moral judgement competence* while other students showed an increase. Feitosa, Rego, Bataglia, Sancho, Rego and Nunes (2013) also found regression in a cross sectional short term pilot study using Lind's Moral Judgment Test (MJT) among the students of 8<sup>th</sup> semester as compared to the first semester students.

Hegazi and Wilson (2013) found in their study that moral segmentation increased as students progressed through medical education while showing decline in moral judgment competence. They found a significant difference and negative correlations between moral judgment and its relation with age and year of medical course of medical students.

Participants of research shared their experiences of studying in third year of medical education that they are exposed to different clinical set ups and are assigned to various hospital wards. There is list of wards where the students are posted: General Medicine, General Surgery, Ophthalmology, ENT, Cardiology, Neurology, Psychiatry, Gynecology, Obstetrics, Urology, Thoracic Surgery, Pulmonology, Pediatric Surgery and Pediatric Medicine.

Table 3 and Figure 3 show statistically significant low Competence scores (C Scores) among medical students of Karachi. When the results are compared between first and final year (refer to Figure 1), it also yields the same significant results of having low mean Moral Competence scores (C score). It provides information that there is a significant relation between Medical Education and C- Score of medical students.

During the medical training, first dissection practical experiences affect 50% of medical students. The students experience negative effects frequently mainly the females and students in clinical training (year 3, 4, 5 and 6). They cope mostly by using cognitive coping strategies such as rationalization and intellectualization. Other coping strategies were also being used. These coping strategies help them to accept and understand negative emotions while having dissection practical experiences. (Sandor, Birkas, & Gyorffy, 2015)

Exposures to cadaveric specimen tend to increase physical and psychological problems in medical students. Despite it all, the students still prefer cadaveric specimen instead of plastic models for anatomy with initial preparing discussions and counseling (Khan & Mirza, 2013).

In a study it is also evident that medical students become hostile with patients as medical education progresses which is the result of conforming to the authority (Branch, 2000). There are various ethics courses that students study during their medical education period but this is not apparently useful in enhancing the moral competence of students.

Asghari, Samadi and Mohammadi (2009) conducted a research on effectiveness of medical ethics course for undergraduate medical students of Tehran University of Medical Sciences. The findings indicated that there is an improvement of knowledge in ethics through this course but it had no effect on the moral judgments of medical students.

Lind's (2000) study show regression in *moral judgement competence* of medical students and stated that regression of moral judgment is linked with learning environment of medical institutions. It focused on essential change in the curriculum and organization of medical education.

An observation was done by Finland researchers Helkama and Uutela (2003) for 2 years of education on changes in moral reasoning, value priorities and self-descriptions. It showed a significant decrease in moral reasoning of medical students.

Ethics and other subjects in the curriculum of medical students should be placed in a manner to enhance moral development and moral competence as stated in previous researches. The methodology, which is used for

supervision by the clinical supervisors and the learning environment, plays a vital role on the development of moral competence during the learning and training phase of medical students.

### **Implications**

This study sheds some light on the importance of being morally competent enough during medical education of students. It can be achieved by:

1. Adding training sessions in medical education to highlight the important aspects of compassion, support and empathy for the patients
2. Changes in curriculum should be made, where students should be prepared from the very start before being exposed to certain situations
3. The medical supervisors should train and educate their students to use their moral reasoning ability
4. The supervisors should provide counseling or recommend students to counselor for psychological counseling because sudden changes and exposures can affect them negatively

### **Limitations and Recommendations**

1. Although the research reached its aim, there were some unavoidable limitations. During the data collection process, many problems were encountered including the exam season of medical students and their unavailability.
2. As the research was carried out on medical students of Karachi, generalizability of sample can be increased by broadening it to other cities. The data was collected by two different methods, face to face and online survey, which could serve as a reason for complexity for its generalizability. The path for generalizability of data could have increased if one data collection method was used.
3. Because of the time limit, cross sectional study was carried out. The validity of results could have been increased if longitudinal study was used.

### **Conclusion**

It was hypothesized that there would be a significant effect of medical education on moral competence of medical students. The study proves that the last year medical students have low moral competence as compared to the first year medical students; however, no significant difference was found between private and public medical universities of Karachi.

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