

AWARENESS ABOUT THE CONCEPT OF GREEN CORRIDOR AMONG MEDICAL STUDENT AND DOCTORS IN A RURAL MEDICAL COLLEGE OF MAHARASHTRA, INDIA

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ABSTRACT

Background: India's traffic problem over the years has been the root cause of many deaths. During an medical emergency like organ transplantation over long distances, the unsuitability of roads and highways hamper in the worst way possible. In a developing unplanned country like India, where lane discipline is an alien concept, emergency lanes won't sustain as of now. Thus, for provision of better health services, a temporary emergency lane has been implemented in organ transplantation cases known as a 'Green Corridor'. It is a special route with manual operation of street signals and traffic to avoid any hindrances that could come in the way of an ambulance. **Aims and Objectives:** To learn about the awareness, strategies and possibilities of Green Corridor in India. **Material and Method:** This was an interventional study by the undergraduate students of Rural Medical College, Pravara Institute of Medical Sciences, Loni, Maharashtra. The study also included 350 Students and 150 Faculty members of Pravara Institute of Medical Sciences (Deemed University) and Practicing Doctors of Central Maharashtra were included in the survey. The survey conducted was in a pre and post-test format. **Results :** The study involved 500 participants out of which 135 were medical faculty and practicing doctor and 350 were students of Rural Medical College. The awareness among medical students about green corridor increased from 14% to 61%, while it went up to 71% from 26% in medical faculty after intervention. Willingness to donate organs increased from 57% to 66% and 78% to 85% among medical students and medical faculty, respectively. The participants gave suggestions to make available air ambulance & emergency roads and increase awareness regarding green corridor. **Conclusion:** From the survey conducted, it can be perceived that there is a massive lack of awareness about Green Corridor as well as reluctance for organ donation. Therefore, awareness should be created on a large scale so that no person is left oblivious. Even on a smaller scale, an implementation of the suggested strategies could make a massive difference in the present scenario regarding medical emergencies.

KEYWORDS: Green corridor; Road traffic accident; Organ transplantation; Medical emergency.

INTRODUCTION

About 60 percent of freight and 87 percent passenger traffic is carried by road. Although National Highways constitute only about 2 percent of the road network, it carries 40 percent of the total road traffic. The share of road traffic in total traffic has grown from 13.8 percent of freight traffic and 15.4 percent of passenger traffic in 1950-51 to an estimated 62.9 percent of freight traffic and 90.2 percent of passenger traffic by the end of 2009-10. [1]

India's traffic problem has often been the cause for many deaths, nearly 1,50,785 persons were killed in 2016 as against 1,46,133 in 2015 only because ambulances couldn't get patients to hospital in time or worse, ambulances weren't able to reach the accident spots on time. [2]The same applies to organ transplants - hearts and other organs from brain dead patients sometimes have to be transported over long distances and often from other cities. Getting them to patient who needs them in time is vital for survival. India's overcrowded roads are unsuitable for medical emergencies.

In western countries, emergency lanes or shoulder roads are present. They are present on the right hand side in countries that drive on the right (like USA, UK), or on the left side in left-side driving countries (like Australia). Many US and Swedish freeways have shoulders on both sides of the roads in the median as well as at the outer edge, for additional safety and in the case



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of a breakdown or by emergency vehicles in the case of road congestion. [3]

But this is practically not possible in India. GREEN CORRIDOR is an alternative to emergency lanes being implemented to certain extent in India proclaiming the safety of its citizen and provides better health services. A GREEN CORRIDOR is a special route where all the street signals are manually operated and the traffic is controlled to avoid any obstacle to ensure quick medical aid to the patient at the earliest. It takes great deal of coordination between traffic police and the situation is more difficult in peak hours. The concept was introduced in 2007 but came into action for the first time in Tamil Nadu in 2008.

The procedure is as follows:

1. When the donor family's consent is confirmed and organs are matched to recipient, the hospital staff gets in touch with police commissioner. This is usually done 2 to 4 hours before the organ is harvested.
2. The traffic police chart the fastest and the most navigable route between the two points.
3. Personnel is placed on different points along the route to blockade the route, manage traffic and make sure that the ambulance does not run into any red light
4. A motorcade of around 4-5 vehicles sets off to the destination. This includes police gypsies as well as additional ambulance as a precaution for breakdown.

The green corridor was used for the first time to transport a heart for transplantation from Apollo hospital, Teynampet, Chennai (south) to Frontier life line hospital, Mugappair, and Chennai (west) in 11 minutes which usually would take 45 minutes with coordination of traffic police. [4]. After this incident many states have used this concept of GREEN CORRIDOR to save hundreds of lives. A green corridor was created from Chennai to Bengaluru for heart transplant where a distance of 15.5 km was covered in 14 minutes. [5] These are just the few examples of many successful cases where green corridor helped in saving lives.

Yet, there are many states in India that aren't still equipped to deal with "Green Corridors". But that could hopefully change as more and more awareness is created.

Aims and Objectives

1. To find out the awareness before and after informing regarding the Green Corridor amongst the medical faculty and students.
2. To enumerate and define various strategies that can be evaluated for better implementation of Green Corridor.

MATERIALS AND METHODS

Study design : This was an interventional study

Ethics approval:

Study location: The present study carried out by the undergraduate students of *Rural Medical College, Pravara Institute of Medical Sciences (DU)*, Loni, Maharashtra.

Study period: One year (2017-18)

Sample size: Universal sample (All students and teaching faculty of Rural Medical College, Loni, willing to participate in the study were included in the study)

Sampling method: Universal sampling.

Inclusion criteria: Students and teaching faculty of Rural Medical College, Loni and practicing doctors of Central Maharashtra willing to participate in the study were included in the study.

Methodology

A self designed and pretested set of questionnaire was used to know the awareness of participants consisted of the following questions-

- i) What do you understand by the term GREEN CORRIDOR?
- ii) What is the medical emergency help line number in India?
- iii) Suppose you see an ambulance stuck in traffic, what can you possibly suggest to make way?
- iv) What will be your call if your dear one is brain dead and the hospital counsels you for organ donation?
- v) Suggest various strategies for better implementation of GREEN CORRIDOR?
- vi) As of now GREEN CORRIDOR is the need of the hour but can you suggest a better alternative in the near future?

The survey was conducted in the format of a pre and a posttest questionnaire. After the completion of pretest, the participants were provided with pamphlet containing information about GREEN CORRIDOR followed by attempting the post test.

Statistical analysis: Comparing the results of the pre and post test, changes in the views were observed and recorded using descriptive statistics.

RESULTS

The study involved 500 participants out of which 135 were medical faculty and practicing doctor and 350 were students of Rural Medical College. After the completion of the survey the following observations were

made:-

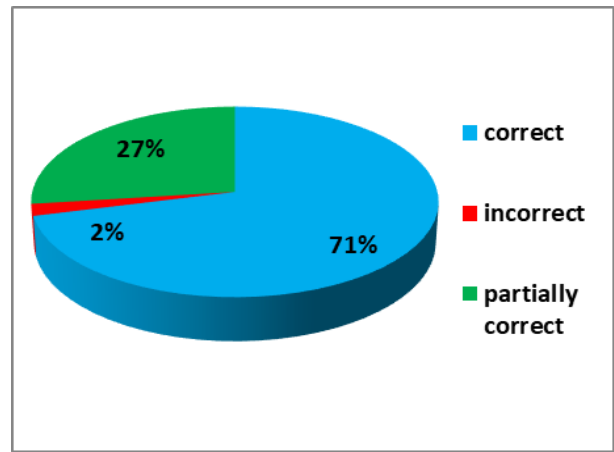
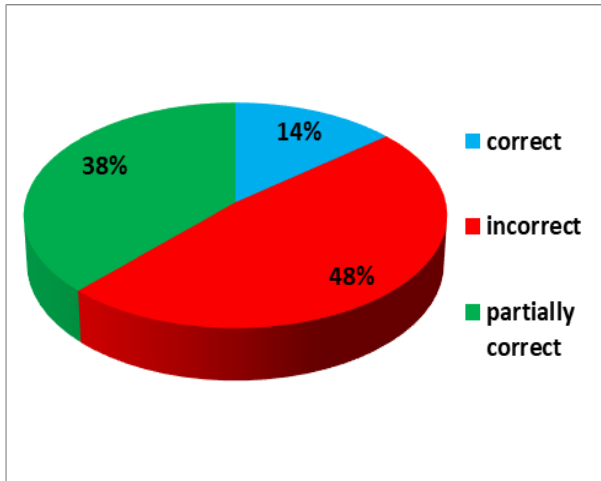


Figure 2: (a) Awareness amongst medical faculty and practicing doctor about GREEN CORRIDOR before intervention (Pre Test) (b) Proportion of medical faculty and practicing doctor about GREEN CORRIDOR after intervention (Post Test)

A prominent increase of around 45% was observed in the awareness about GREEN CORRIDOR in medical faculty and practicing doctor.

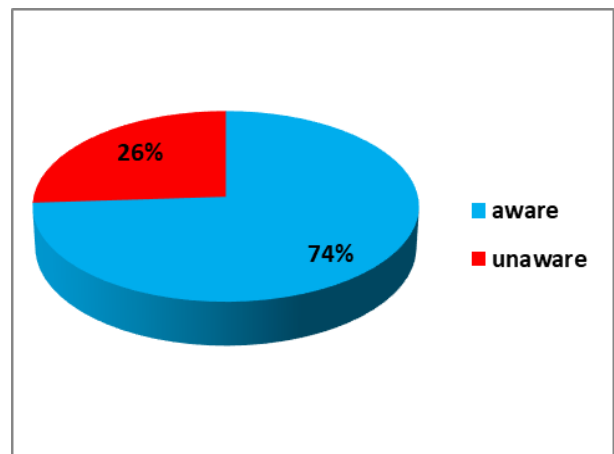
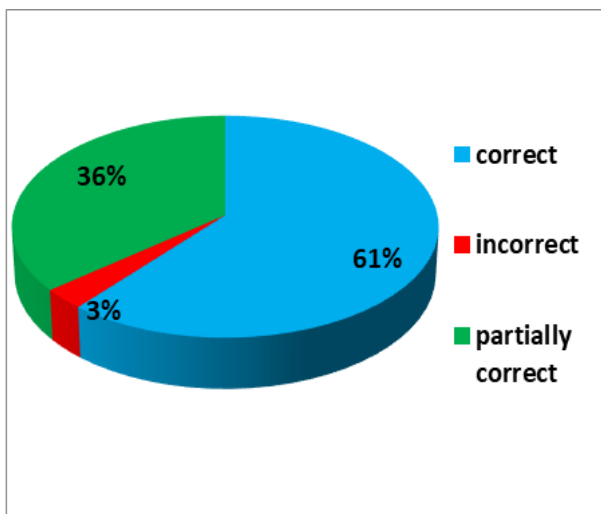


Figure 1: (a) Awareness amongst medical students about GREEN CORRIDOR before intervention (Pre Test) (b) Awareness amongst medical students about GREEN CORRIDOR after intervention (Post Test)

There was an increase in the awareness about GREEN CORRIDOR in medical students from 14% to 61%.

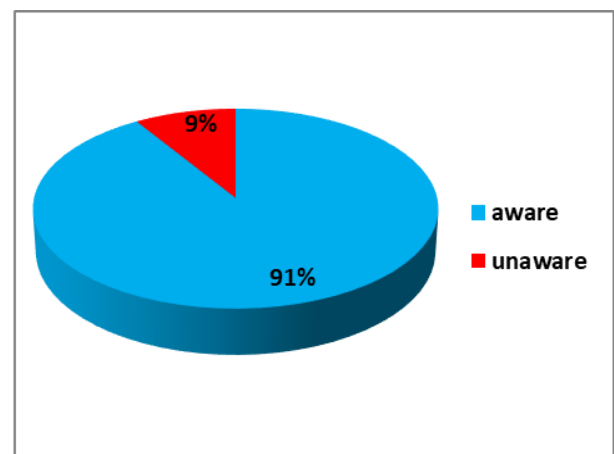
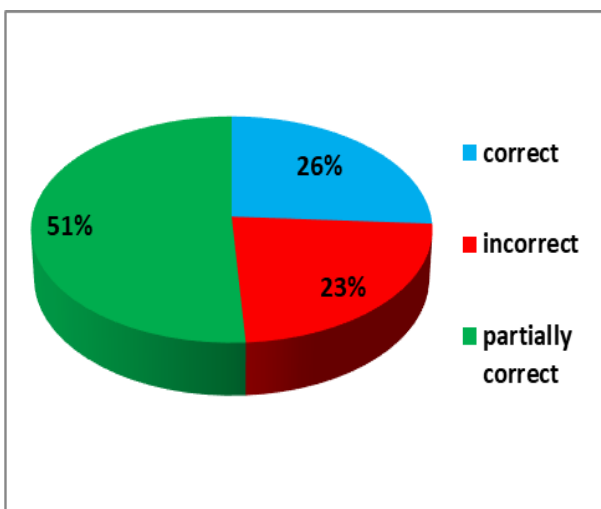


Figure 3: (a) Awareness regarding Medical Emergency helpline number amongst medical students before intervention (Pre Test) (b) Awareness regarding Medical Emergency helpline number amongst medical students after intervention (Post Test)

It was observed that 26% of the medical students were unaware of the medical emergency helpline number in pre test which reduced to 9% post test.

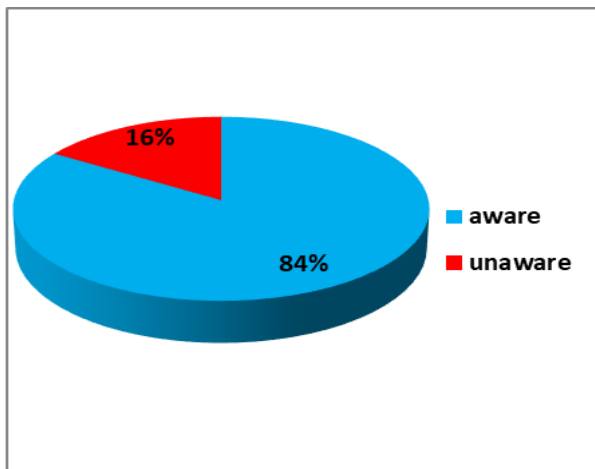
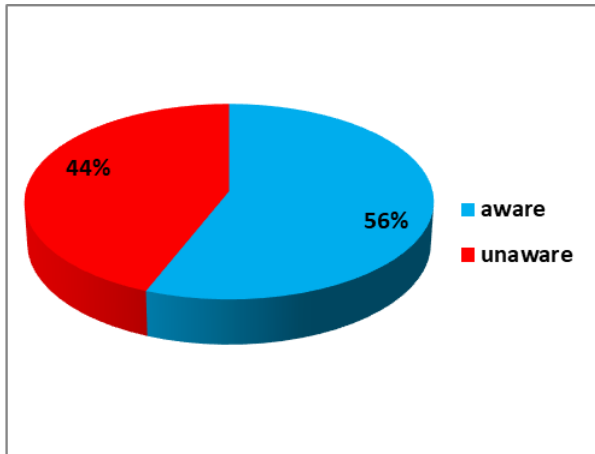


Figure 4: (a) Awareness regarding Medical Emergency helpline number amongst medical faculty and practising doctors before intervention(Pre Test) **(b)** Awareness regarding Medical Emergency helpline number amongst medical faculty and practising doctors after intervention(Post Test)

It was surprising to know that only 56% of medical faculty and practicing doctor were aware of medical emergency helpline number before intervention which elevated to 84% after intervention.

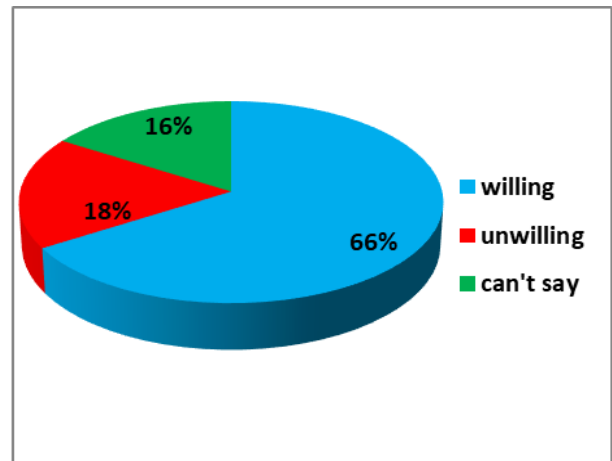
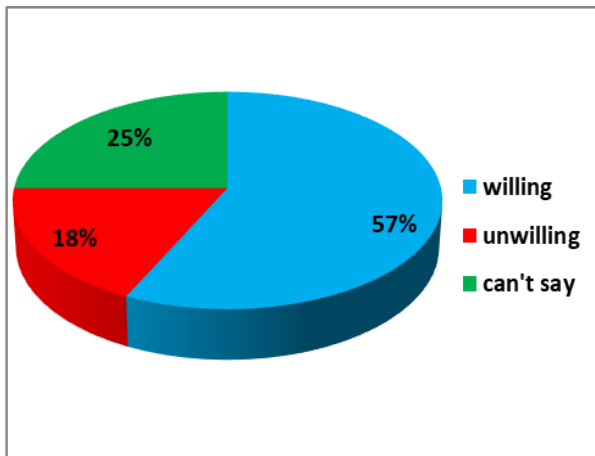


Figure 5: (a) Willingness to donate organs on behalf of their brain dead dear ones amongst medical students before intervention(Pre Test) **(b)** Willingness to donate organs on behalf of their brain dead dear ones amongst medical students after intervention(Post Test)

There was slight increase of around 9% only in willingness of donate organs of their brain dead relatives even after intervention.

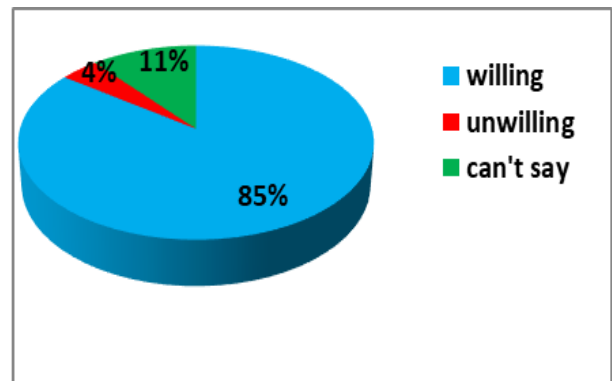
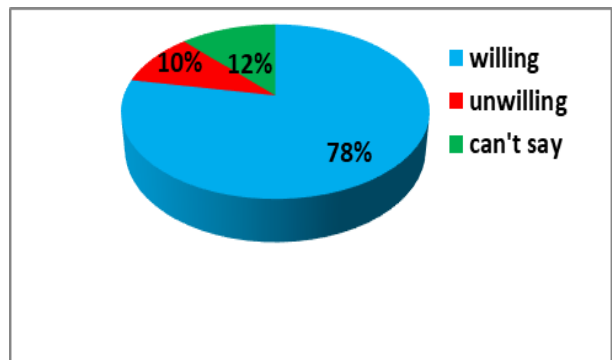


Figure 6: (a) Willingness to donate organs on behalf of their brain dead dear ones amongst medical faculty and practicing doctors before intervention(Pre Test) **(b)** Willingness to donate organs on behalf of their brain dead dear ones amongst medical faculty and practicing doctors after intervention(PostTest)

The willingness to donate organs of their brain dead relatives by the medical faculty and practicing doctors was increased from 78% to 85% after intervention.

From the above observations the following results were drawn:-

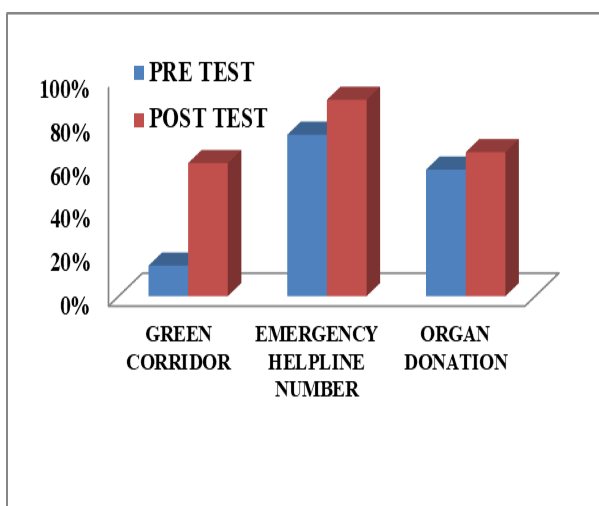


Figure 7: Comparative analysis of medical students (n=350) on their change in perspective on awareness of GREEN CORRIDOR, Emergency helpline number, Organ donation.

This graph compares the observations made in medical students after completion of both pre and test.

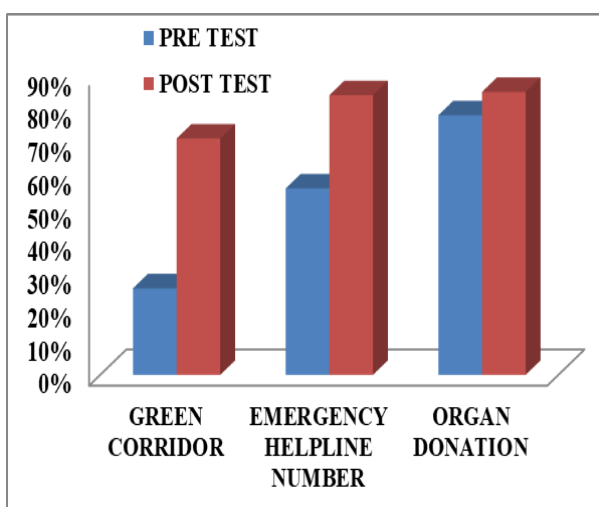


Figure 8: Comparative analysis of medical faculty and practicing doctors (n=150) in percent, on their change in perspective on awareness of GREEN CORRIDOR, Emergency helpline number and Organ donation.

Table 1. Suggestions given by study participants regarding Green Corridor.

Suggestions	Percentage
Air ambulance	50%
Awareness	25%
Emergency roads	20%
Others (drones, better roads, stem cells, cryopreservation)	5%

This graph compares the observations made in medical faculty and practicing doctors after the completion of the survey. Mentioned below are the suggestions obtained in response to our strategic questions:-

DISCUSSION

The main aim of GREEN CORRIDOR is to save lives. It has been implemented for quick transportation of an organ from a brain dead person to a recipient at a designated hospital. The need for a GREEN CORRIDOR arises because of the short viability of the harvested organ. The organs that have been transported using a GREEN CORRIDOR are the HEART and LIVER. The viability of the heart is 4-6 hours while that of the liver is 12-15 hours. Since the heart has the shortest viability, it has been given the topmost priority. However, certain other cases have also been reported where a GREEN CORRIDOR was set up. One such case was where a critically ill 6-month child was taken from Pratiksha Hospital, Guwahati to Guwahati airport using a GREEN CORRIDOR in 26 minutes and then airlifted to New Delhi. [6]

According to our survey, amongst the medical students, 48% of the participants were oblivious of GREEN CORRIDOR pre intervention. It declined to 3% post intervention. Majority of these participants related the concept to an eco-friendly environment. A decline from 38% to 36% was observed in the percentage of participants partially correct who attributed the concept of GREEN CORRIDOR to organ donation only. A hike from 14% to 61% was noted in the percentage of participants who correctly knew the concept of GREEN CORRIDOR post intervention. (Figure 1 a and b). Amongst the medical faculty and practicing doctors, 23% of the participants were oblivious of GREEN CORRIDOR before intervention. It declined to 2% post intervention. Majority of these participants related the concept to an eco-friendly environment. A decline from 51% to 27% was observed in the percentage of participants partially correct who attributed the concept of GREEN CORRIDOR to organ donation only. A hike from 26% to 71% was noted in the percentage of participants who correctly knew the concept of GREEN CORRIDOR post intervention. (Figure 2 a and b).

It was astonishing to know from the study that only 56% of the medical faculty and practicing doctors and 74% of the medical students were aware of the medical emergency helpline number pre-intervention. This proportion increased to 84% amongst medical faculty and practicing doctors and 91% amongst medical student's post-intervention. (Figure 3a and 3b) and (Figure 4 a and b).

Eighteen percent of medical students were reluctant towards organ donation. Despite intervention, the percentage of people unwilling to donate organs remained constant which was disheartening. (Figure 5 a and b). 10% of the medical faculty and practicing doctors were not willing to donate the organs pre-intervention which

declined to 4% post-intervention. However, 25% of medical students and 12% of medical faculty and practicing doctors who were in a dilemma pre-intervention gave an optimistic response and raised the percentage of willing donors from 57% to 66% amongst medical students and 78% to 85% amongst medical faculty and practicing doctors. (Figure 6 a and b)

For medical students, there was a raise of 47% in the awareness of GREEN CORRIDOR, 17% hike regarding emergency helpline number and an increase by 9% for organ donation. For medical faculty and practicing doctors, there was a raise of 45% in the awareness of GREEN CORRIDOR, 28% hike regarding emergency helpline number and an increase by 7% for organ donation (Figure 8 & 9)

Various suggestions were obtained to our strategic questions. 50% of the participants suggested air ambulance as a better alternative, 25% were suggestive of conducting awareness programmes on a massive scale, construction of emergency lanes was advised by 20% of the participants, 5% of the participants suggested of other options which were inclusive of drones, better and well maintained roads, stem cell therapy and cryopreservation.(Figure 9)

Most of these suggestions cannot be implemented immediately because of the practical difficulties and financial constraints. In the coming years with proper coordination and combined efforts involving the government and hospital management supplemented with adequate funding, it can be put into action. As of now, advancement in training of the hospital staff, paramedics, police and doctors could be of major help.

CONCLUSION

From the survey conducted, it can be perceived that there is massive lack of awareness about GREEN CORRIDOR as well as organ donation. Therefore, awareness should be created on a large scale so that no person is left oblivious. The seminars and pamphlets giving all relevant information of green corridor, emergency helpline numbers and organ donations proved to create significant change in the knowledge, attitude amongst medical students, medical faculty and practicing doctors.

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