# Exploring alternative approaches to next of kin consenting in the semi-emergency neurosurgical scenario

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## ABSTRACT

**Introduction: Prior to any surgical intervention, obtaining informed consent is necessary. In situations where patients are unable to provide informed consent due to mental incapacity or reduced consciousness, the responsibility falls on surrogate decision-makers, typically family members. This predicament commonly arises during neurosurgical emergencies. Various types of surgical emergencies exist, each with its own classification. In cases of life-threatening neurosurgical emergencies and in the absence of next of kin, two consultants have the authority to decide and grant surgical consent. However, for urgent and semi-emergency surgical cases, obtaining consent from the next of kin is crucial. The conventional requirement for the physical presence of the next of kin at the hospital often causes delays in the procedure. This study aims to explore alternative methods for efficiently and compliantly securing this consent for urgent and semi-emergency neurosurgical cases.**

**Materials and Methods: A prospective, observational cross-sectional survey was conducted from 1st May 2022 to 31st December 2022 at the University of Malaya Medical Centre, Kuala Lumpur. This survey included all neurosurgical patients aged 18 and above requiring urgent and semi-emergency surgery. The next of kin were interviewed using a standardised questionnaire to obtain their perspectives on the effectiveness of the current consenting process, as well as to explore potential alternative methods for obtaining consent. Data were analysed using IBM SPSS Statistics.**

**Results: The survey had 103 responses. The analysis revealed that the most common semi-emergency surgical procedures were craniotomy (22 cases) and external ventricular drain insertion (18 cases), followed by burr hole and drainage (14 cases). The most common primary diagnosis that needed urgent intervention was acute hydrocephalus. Interestingly, more than half of the patients (58 cases, 56.3%) had to wait for over 30 minutes to obtain consent from their next of kin prior to surgery. The next of kin interviewed had an age range of 25 to 72 years. The relationships of the next of kin were children (33 subjects), spouses (26 subjects), siblings (25 subjects), and parents (16 subjects) of the patients. Additionally, 96.1% of the respondents owned a smartphone with a mobile internet data connection, and 85.4% had internet connectivity at home. The most preferred method of telecommunication for this exercise was via WhatsApp. An interesting finding was the association between the level of trust in medical professionals and the preferred consent method. It was discovered that individuals who preferred physical consent had lower trust in the hospital and doctors, while those who preferred remote consent had higher trust.**

**Conclusion: The urban Malaysian population are ready to embrace telecommunication for next-of-kin consent in semi-emergency neurosurgical scenarios. These findings form a precursor to further studies to develop algorithms for a secure remote digital surgical consenting platform for urgent or semi-emergency surgical cases.**

**KEYWORDS:**
*Semi-emergency, surgical consent, telecommunication, next-of-kin*

## INTRODUCTION

Informed consent is one of the fundamentals in treating a patient. Consent is the voluntary agreement by a person to the proposal of another; actual willingness that an act or an infringement of an interest shall occur.[1] The doctrine of informed consent is meant to facilitate patient autonomy by allowing patient participation in the medical decision-making process.[2] However, in the event of impaired mental capacity, the decision-making relies on surrogate decision-makers, if available, such as family members. It is legally binding, which is described as "voluntary authorisation, by a patient or research subject, with full comprehension of the risk involved, for diagnostic or investigative procedures and for medical and surgical treatment".[1,3]

In the emergency department, a life-threatening neurosurgical condition would warrant surgery with the agreement of two independent consultants, typically the neurosurgeon and an anaesthetist, without any necessity of patient or family consent. However, in the neurosurgical practice, there are a group of semi-emergency cases which need urgent surgery to prevent deterioration of the condition but are not life-threatening conditions at that material time. The patient might not be able to provide informed consent for an urgent procedure after a failed clinical assessment of competency or due to a reduced consciousness level.[4,5] This group of patients would need informed consent from the next of kin before proceeding with the surgical intervention.[4]

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The current practice in our facility is to request for the first-degree family member to physically be present at the hospital to listen to the explanation and obtain written consent. The patient can be wheeled to the theatre for the surgical intervention only after the written consent is obtained. Based on our experience, the need for the physical presence of the next of kin at the hospital at short notice at any time of the day is one of the key reasons that the surgical procedure gets delayed. The delay in arrival could be due to various reasons, such as being engaged at work, having domestic duties, or being caught up in traffic, depending on the time of the day. These circumstances became more challenging during the peri-pandemic period, particularly during the enforcement of the movement restriction order (MCO) at the pandemic's peak. The process of securing written consent in this cohort of patients was significantly delayed, and the hospital policy for the next of kin surgical consenting remained unaltered during the peri-pandemic period. These were some of the predicaments faced during the pandemic phase.

The literature looking at the effects of telemedicine in getting informed consent for remote research study enrolment found no differences in comprehension between telemedicine-based consent and traditional face-to-face methods.6 This method had been adopted during the COVID-19 pandemic by many hospitals, including ours. By using video calls, the surrogate will be able to see the patient, appreciate the severity of the condition, and facilitate decision-making.[7] However, there were limiting factors: limited telecommunication connectivity, availability of suitable devices, privacy and confidentiality.

Unfortunately, despite obtaining verbal consent via telephone, the next of kin was still required to come at some point to physically sign the consent form, as written consent is mandatory for any form of surgical procedure in our hospital policy.

This formed the basis for us embarking on analysing alternative meanings of securing consent for this cohort of patients to find a more efficient means of obtaining the next of kin's consent and ensuring the surgical procedure is carried out in a timely manner. It would only be logical to implement the existing telecommunication methods to execute this process meaningfully and securely. This survey was designed to explore the experience and views of the next of kin regarding the existing process of acquiring consent for surgical treatment and their views and perceptions concerning alternative methods of acquiring consent using digital and media technology.

## MATERIALS AND METHODS

An observational cross-sectional prospective study of acquiring informed consent by next of kin for a semi-emergency neurosurgical procedure was carried out between 1st May 2022 and 31st December 2022. The survey was conducted during the pandemic period when the hospital had stringent visiting regulations which limited physical contact between the next of kin and an inpatient family member.

All neurosurgical patients aged 18 years old and above who needed semi-emergency neurosurgical intervention irrespective of the time of the day via consent from the next of kin between the 1st May 2022 and 31st December 2022 at the University Malaya Medical Centre were enrolled in this survey. The universal sampling method was used to collect the sample.

Next-of-kin consent was performed in the standard fashion as per local medical council guidelines. The researcher would obtain the relevant clinical and epidemiology data pertaining to the case from the medical notes.

A questionnaire was framed based on information gathered from discussions with stakeholders, including neurosurgeons, patients and next of kin. The same standard questionnaire was used during all the interviews. The next of kin of the patient was interviewed either in person or through the telephone to get their opinion regarding the process of consenting that had been performed. The questionnaire had a mix of closed and open-ended questions.

Subsequently, bar and pie charts were plotted to display the frequency and percentages of the categorical variables for both patients and next of kin epidemiology, next of kin views on consenting procedure and preference on consenting procedure.

Any obvious dependencies between factors contributing to alternative consenting evidenced from the bar charts would be further investigated using the Chi-Squared test. The null hypothesis for this test is that there are no associations between categorical variables of interest. The relationship between the delay in consenting and proceeding with surgery was also conducted using the Pearson correlation coefficient. Data in this study was analysed using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, NY).

The survey was conducted in compliance with ethical principles outlined in the Declaration of Helsinki and the Malaysian Good Clinical Practice Guideline. The study proposal was approved by the Ethics Committee of the University Malaya Medical Centre and the National Medical Research Register (Ethic number 202232-11039).

## RESULTS

A total of 130 patients fulfilled the inclusion criteria and were enrolled in this survey. However, there was an attrition of 27 persons; 23 were not keen to continue further, one had a language barrier, and three persons' conditions had deteriorated further and were operated as an emergency with two consultants' consent. In total, 103 responses were analysed. The results of this survey are divided into four parts.

### Part 1: Epidemiology

In this survey, a total of 103 patients fulfilling the inclusion criteria were enrolled. The statistical power of the study is 92% at an effect size of 0.4, calculated using the G*Power software.

**Table I: Summary of patient's epidemiology**

| Patient's epidemiology | | Number of participants (%) |
|---|---|---|
| Race | Malay | 32 (31%) |
| | Chinese | 45 (43.7%) |
| | Indian | 24 (23.3%) |
| | Others | 2 (25%) |
| Gender | Male | 72 (70%) |
| | Female | 31(30%) |
| Type of case | Urgent | 53 (51.5%) |
| | Semi-emergency | 50 (48.5%) |
| Case seen at | Emergency department | 76 (73.8%) |
| | Ward | 27 (26.2%) |
| Diagnosis | Hydrocephalus | 25 (24.3%) |
| | Chronic subdural haemorrhage | 16 (15.5%) |
| | Traumatic brain injury | 16 (15.5%) |
| | Spontaneous intracranial haemorrhage | 13 (12.6%) |
| | Intracranial infection | 12 (11.7%) |
| | Tumoural bleed | 6 (5.8%) |
| | Cerebral infarction | 3 (2.9%) |
| | Spinal trauma | 3 (2.9%) |
| | Others | 9 (8.7%) |
| Procedure done | Craniotomy | 22 (21.3%) |
| | External ventricular drainage | 18 (17.5%) |
| | Burr hole and drainage | 14 (13.6%) |
| | Ventricular peritoneal shunt | 10 (9.7%) |
| | Intracranial pressure monitoring | 9 (8.7%) |
| | Craniectomy | 8 (7.8%) |
| | Wound debridement | 8 (7.8%) |
| | Tracheostomy | 3 (2.9%) |
| | Clipping of aneurysm | 2 (1.9%) |
| | Endoscopic CSF leak repair | 2 (1.9%) |
| | Laminectomy | 2 (1.9%) |
| | Others | 5 (4.9%) |
| Waiting duration for consenting | Less than 30 minutes | 45 (43.7%) |
| | 31 – 60 minutes | 20 (19.4%) |
| | 61 – 90 minutes | 3 (2.9%) |
| | More than 91 minutes | 35 (34%) |

The age range of patients enrolled was between 19 and 89 years old, with a median age of 52.2. Their gender distribution was 72 male patients and 31 female patients. The racial distribution was 45 cases of Chinese, 32 cases of Malay, 24 cases of Indian and 2 cases of foreigners (Burmese and Indonesia). Most cases (73.8%, 76 cases) were enrolled at the emergency department, and the remaining (26.2%, 27 cases) were in-patients whose clinical condition eventually deteriorated on the ward. Most emergency cases were cranial conditions, with a small proportion being spine emergencies, as summarised in Table I. In this survey, the commonest emergency surgery procedure was craniotomy (22 cases), external ventricular drain insertion (18 cases), followed by burr hole and drainage (14 cases). A summary of the patient's epidemiology is displayed in Table I.

In our survey, acute hydrocephalus predominates the diagnosis of emergency cases (25 cases) that require urgent intervention, followed by chronic subdural haemorrhage (16 cases), traumatic brain injury (16 cases), spontaneous intracranial haemorrhage (13 cases), intracranial infection (12 cases) as depicted in Table I.

Adapting from the Kulkarni paper on "Pattern and Categorisation of Neurosurgical Emergencies", emergency neurosurgeries can be simplified into life-threatening, organ-threatening or emergent, urgent or semi-urgent.[8] Following this categorisation, certain surgical waiting time limits according to their urgency have been proposed.[8] Our survey defined urgent cases as requiring surgery within 4 hours and semi-emergency as requiring surgery within 72 hours from the time of diagnosis.

Our data collection also captured the duration from obtaining consent from the next of kin and the duration taken to perform the surgery. More than half (61 cases, 56.3 %) of patients is required to wait more than 30 minutes to get consented by the next of kin prior to surgery. Further, a significant moderate linear relationship (correlation coefficient, $R = 0.51$, $p<0.05$) was observed between the delay in obtaining consent and the delay in proceeding with surgery, especially in urgent cases (Figure 1). This suggests that an increase in the time taken to secure consent from the next of kin is associated with a corresponding increase in the time taken to initiate surgery.

**Part 2: Next of kin epidemiology**

The next of kin age range was between 25 to 72 years old with median age of 45.7 years, with female predominance. They were mainly children (33 subjects), spouses (26

**Table II: Summary of the epidemiology and accessibility to digital communication devices and technology by the next of kin**

| Next of kin epidemiology | | Number of participants (%) |
|---|---|---|
| Gender | Male | 39 (37.9%) |
| | Female | 64 (62.1%) |
| Relationship | Children | 33 (32%) |
| | Spouse | 26 (25.2%) |
| | Sibling | 25 (24.4%) |
| | Parents | 16 (15.5%) |
| | Others | 3 (2.9%) |
| Level of education | Primary | 8 (7.8%) |
| | Secondary | 40 (38.8%) |
| | Tertiary | 55 (53.4%) |
| Preferable language | Malay | 40 (38.8%) |
| | English | 30 (29.1%) |
| | Chinese | 29 (28.2%) |
| | Tamil | 4 (3.9%) |
| Estimated travelling time to hospital | < 30 minutes | 68 (66%) |
| | 31 - 60 minutes | 21 (20.4%) |
| | 61 - 90 minutes | 2 (1.9%) |
| | > 91 minutes | 12 (11.7%) |
| Transport to hospital | Own | 98 (95.2%) |
| | Public transport | 3 (2.9%) |
| | Others | 2 (1.9%) |
| Ease of getting to the ward | No issue | 81 (78.6%) |
| | Parking | 16 (15.5%) |
| | Language barrier | 4 (3.9%) |
| | Logistic | 2 (1.9%) |
| | Travelling distance | 1 (0.1%) |
| Type of phone owned | Smart phone | 99 (96.1%) |
| | Basic phone | 4 (3.9%) |
| Other devices ownership | Yes | 69 (70%) |
| | No | 34 (30%) |
| Internet connectivity at home | Yes | 88 (85.4%) |
| | No | 15 (14.6%) |
| Email account | Yes | 83 (80.6%) |
| | No | 20 (19.4%) |

**Table III: Next of kin view on existing consenting process**

| Consenting process | | Number of Patients (%) |
|---|---|---|
| Met the treating doctor prior | Yes | 61 (59.2%) |
| | No | 42 (40.8%) |
| Decision for surgery | Need to discuss with other family members before final decision | 53 (51.5%) |
| | One individual decision | 50 (48.5%) |
| Level of understanding regarding surgery | Understood fully and agree | 64 (62.1%) |
| | Understood parts but agree | 10 (9.7%) |
| | Trust the doctor to do what is needed | 27 (26.3%) |
| | Agreed to proceed despite not understanding the operation; however, understood it was urgent | 2 (1.9%) |
| Any concern the consent was taken | Yes | 14 (13.6%) |
| | No | 89 (86.4%) |
| Level of trust in discussion via telephone | Very trust | 70 (68%) |
| | Trust | 5 (4.9%) |
| | Less trust | 28 (27.1%) |
| Consenting without physical presence | Yes | 63 (61.2%) |
| | No | 40 (38.8%) |
| Alternative mode of consent preferred | WhatsApp | 80 (77.7%) |
| | WeChat | 13 (12.6%) |
| | Email | 6 (5.8%) |
| | Phone call | 4 (3.9%) |

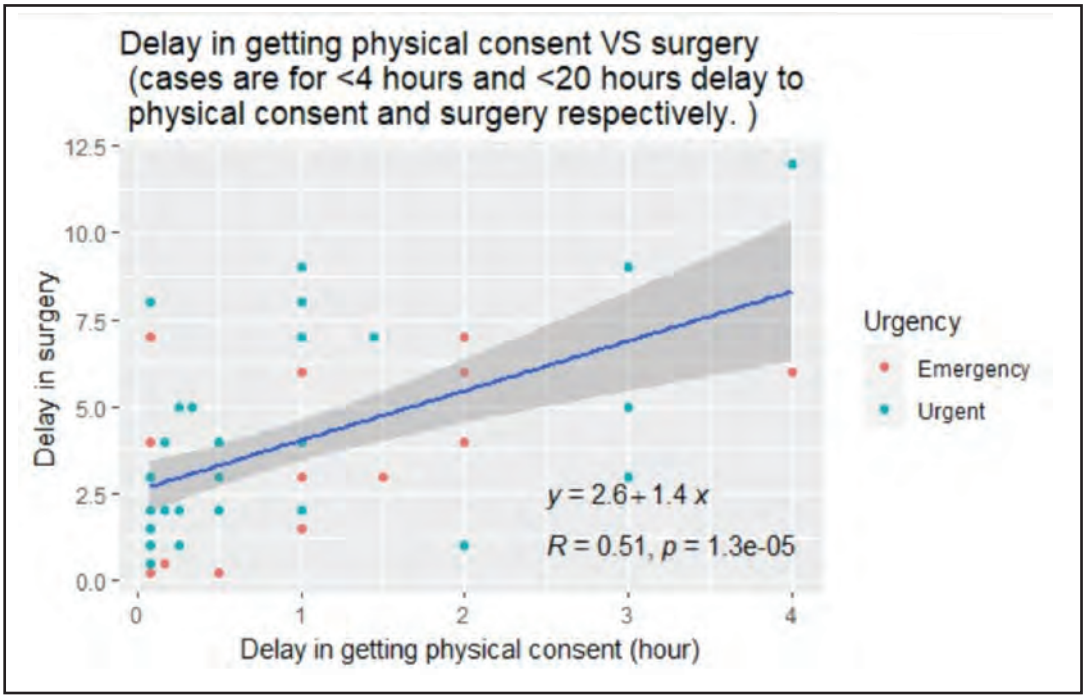


**Fig. 1:** Scatter plot demonstrating the delay in getting physical consent causing delays in proceeding with surgery especially in urgent cases

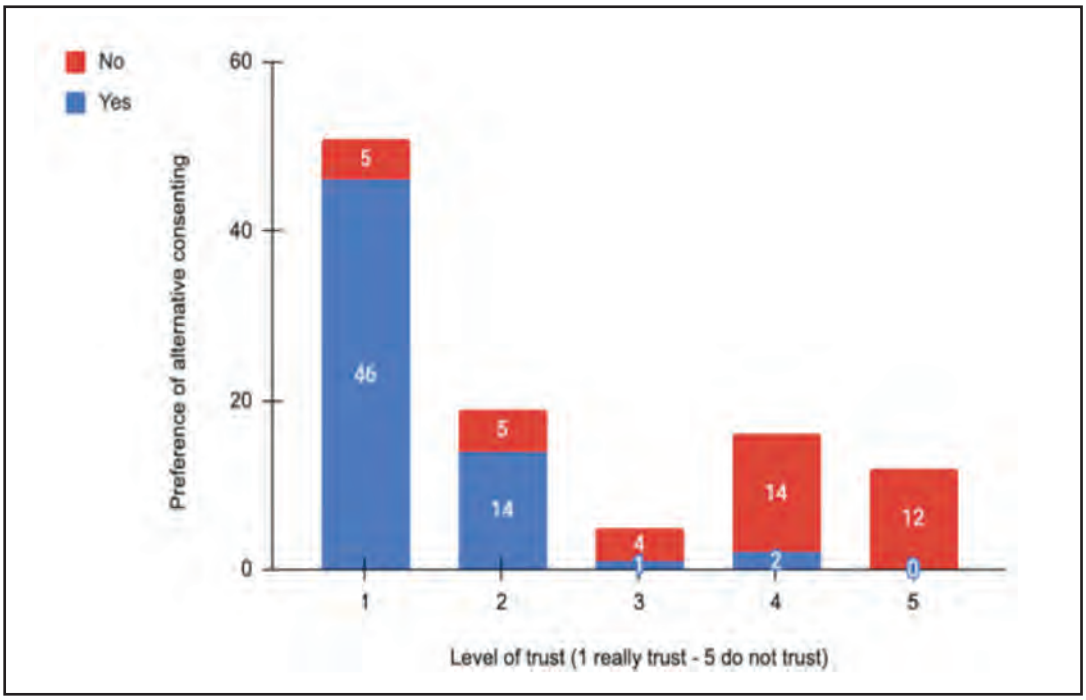


**Fig. 2:** Association of level of trust in conversation with medical professional via telephone and their view of alternative consenting method, the level of trust linearly increases as their preference of alterative consenting as method of choice

subjects), siblings (25 subjects) and parents (16 subjects) to the patients. The majority have a tertiary education level and prefer to speak in their mother tongues, if possible or either Malay or English as an alternative. The majority stay less than 30 minutes' drive from the hospital (66%, 68 subjects) and have their own mode of transport (95%, 98 subjects).

96.1% of the respondents possessed a smartphone with a mobile internet data connection. 69 subjects (70%) had a computer, laptop or tablet, with 88 subjects (85.4%) had internet connectivity at home. The summary of next of kin's epidemiology is depicted in Table II.

**Part 3: Next of kin views on current consenting protocol**
The majority of respondents were comfortable with and understood the existing method of consent-taking for urgent and semi-emergency surgery of their next of kin. The survey found that in engagement with the doctor, they would want to be informed about the indication and duration of surgery, risk and possible complications that might occur, recovery period, long-term prognosis and potential improvement of symptoms.

**Part 4: Preference on consenting procedure via alternative methods**
Most respondents, 61.2%, preferred to give consent without visiting the hospital during the consenting process (Table III); they would have preferred to give their consent via telephone. 38.8% of the participants still wanted to travel to the hospital to sign the papers prior to the surgery. Within the cohort that would not want to be physically present during the consent, 33% preferred to sign the document on another day after they gave their verbal consent through the telephone. The mode of telecommunication most preferred was the WhatsApp application. Summaries on next of kin preference depicted in Table III.

We also found a significant association between next of kin's trust towards medical professionals and their consenting method preference. The respondents who had trust in the hospital and doctors seemed to accept the idea of giving consent verbally via telecommunication, as evidenced by the Chi-Squared test with $p< 0.001$ (Figure 2). Meanwhile, those who preferred to give their consent physically had a lower level of trust in the hospital and doctors.

## DISCUSSION

In emergency neurosurgical procedures, time is of the essence. In a survey looking at postoperative mortality in combat traumatic brain injury, it has been concluded that postoperative mortality was significantly lower in patients who underwent craniectomy immediately within 5.3 hours in comparison to a longer delay.[9] In another study to characterise different types of surgical cases to increase the efficacy of surgical timing, many of the neurosurgery emergency cases were classified as level 1 and level 2 priority in tertiary hospitals worldwide.[10] Level 1 emergency cases should be in the theatre within 1 hour, and level 2 cases should be in within 2 hours, indicating the intervention's urgency to obtain a better outcome.[8] Meanwhile, within our local guidelines, emergency surgery is further divided into acute emergency, non-trauma emergency, trauma emergency, urgent and semi-urgent, which carry a different weightage in terms of urgency.[11] The type of surgery can also be classified as immediate life-threatening, life-threatening, organ-threatening, non-critical but emergent, non-critical, non-emergent but urgent and semi-urgent.[8] Therefore, there are various classifications of the type of surgical emergencies and the priority to enter the emergency theatre.

in reality, it is the interaction of the surgeon with the anaesthetist on the urgency of the case and the discretion of the anaesthetist based on the individual case circumstances that are considered in prioritising the operation theatre appropriately. In urgent and semi-emergency cases, one of the factors determining entry to the operation theatre is the written consent for surgery from the patient or next of kin. Our survey revealed an interesting finding: delays in obtaining consent also result in subsequent delays in bringing the patient to the operating room after a case has been booked in the emergency theatre. It is hypothesized that this may be because the anaesthesia team perceives that the consent process has been delayed, leading them to believe that the cases are not as urgent as reported by the surgical team. Based on the survey, this sort of delay could potentially be avoided by utilising advanced telecommunication methods to obtain next-of-kin consent, which in the existing hospital protocol must be done by the physical presence of the next of kin.

The pandemic has stimulated and initiated the need to study the use of digital technology to secure surgical consent from the next of kin in a semi-emergency situation that is robust and aligned with the regulation of the medical council. We foresee this as being the new norm in surgical practice. This concept and framework can later be extrapolated to other areas of consenting in medical practice at large. Noteworthy, the majority of the participants in our survey (61.2%) would consider utilising an advanced telecommunications portal to give informed consent. Therefore, advanced alternative means of communication and consenting in this digital age shows great promise to expedite the patient care in the setting of urgent and semi-emergency surgical cases.

It is evident that 100 % of the next of kin surveyed possess at least one remote communications device, with 96.1% having a smartphone with a mobile internet data connection. The high utility of smartphones is essential for implementing digital consenting in an emergency setting. This allows people to respond promptly from any location without needing to be in front of a computer.

Against this demographic, this survey highlighted that most next of kin (61.2%) would have preferred to consent without visiting the hospital during the consenting process for urgent and semi-emergency cases involving their family member if that option was available to them. The potential reasons for such a response could be that many individuals, due to work commitments, may be unable to leave their jobs suddenly when summoned for emergency consent. Additionally, their close family members may be out of town, it could be late at night, or transportation may be limited. The survey shows that 68% would have complete trust in the discussion, even if it were via the telephone. However, 27% had some trust deficits when engaging in such a discussion via the telephone. The preference appears to be the WhatsApp application, which allows for rapid verbal discussion, video discussion, and messaging without much interruption most of the time. In conclusion, digital telecommunications are a concept that is accepted by the public. A meta-analysis exploring patient satisfaction with the electronic method of the informed consent process showed that they are 1.9 times more satisfied with electronic tools than with the traditional method.[12]

In the post COVID-19 era, many sectors have integrated the latest technology for easy access to different demographics and geographical conditions; for example, there are online classes via virtual classrooms in the education system. Meanwhile, in the healthcare system, multiple applications have been developed to monitor certain conditions, such as cardiovascular care, by monitoring heart rate, rhythm as well as blood pressure monitoring statistics which can be transmitted wirelessly.[13] Furthermore, an e-book has been created to help patients better understand the diagnosis and procedure proposed for certain treatments.[14] Thus, the application of this new technology in health care is becoming more common. Developing an alternative method of obtaining next of kin consent via digital telecommunication is timely for faster treatment in this cohort of patients and convenience for the next kin when contacted any time of the day.

Moreover, 59% of the next of kin had met with the team of treating doctors during the initial admission. Hence, during the consenting process for the urgent procedure, they already had some prior knowledge of the condition and rapport with the doctors in charge. This made the engagement and trust in the telecommunication discussion easier with fewer doubts arising thereafter. This element of trust is key in communication and eases the family's decision-making on behalf of the next of kin. Approximately 51% of the respondents needed extra time to discuss with other family members before deciding. Nevertheless, this is a well-known phenomenon amongst the Asian community as the decision is made by a few key family members in consensus rather than one member alone. Most of the respondents, 62%, understood the discussion points raised and proceeded to give their consent. Meanwhile, 26% signed the consent form based on trust that the doctor would perform what was needed without understanding the details of the procedure.

Trust in medical health care providers is vital for optimum patient-doctor relationships and adherence to the treatment plan given.[15] Thus, it is not surprising that our data has shown an optimistic correlation between the level of trust in telephone conversations and their preference for alternative methods of consenting. Factors contributing to successful communications include politeness, imagination, constructiveness, professionalism, transparency, and technology-friendliness.[16] Other co-factors that determine the information given can be understood, includes social and cultural differences, language inclination, religious beliefs and generation gap.[16] Considering these features, the healthcare providers must be able to describe the clinical conditions in layperson's terms, highlight the relevant information needed and provide the treatment options without bias to make sure the receiver can weigh the pros and cons before making a decision.

Our survey has shown that good communication skills with no language barrier could give confidence to the next of kin in deciding and consenting to the next of kin's urgent or semi-emergency surgery, even though the consultation is not done in a physical face-to-face conversation. However, a point of caution when implementing cutting-edge technologies in the public domain is to ensure those with impairments or who are unfamiliar with technology are not disadvantaged.[12]

The data also corroborates with the results of a study by Ambigapathy R., where it has been found that Malaysian culture is similar to Japanese and other Asian countries' cultures, where shared decision-making is a common practice, collectively done among family members.[17] Approximately 80% of the participants expressed a desire for their spouses to be involved, and over 50% expressed a desire for their children to be included in the discussion.[15] A collective decision is typically taken as the family entity would share in the post-operative care of the next of kin.[17] These points highlight that in many Asian communities, the decision regarding treatment for a next of kin usually involves several family members rather than just one close family member, i.e. spouse or parent.[18] Therefore, the telecommunication engagement of several family members in one sitting may be more fruitful and yield a faster decision than approaching different individuals at different times.

It's important to note that this survey was conducted at a tertiary hospital in an urban setting. Therefore, the findings primarily represented urban sentiments regarding next of kin consenting through telecommunication. It's possible that the demographic of the population may vary in rural areas, and as a result, the survey results may not be directly applicable to rural regions. It's important to remember, nonetheless, that Malaysia has a high level of technical availability, according to the most recent statistics on digital adoption.[19] In Malaysia, there were 33.59 million internet users as of early 2024, which is 97.4% of the country's total population with 129.2% of the population, or 44.55 million active cellular mobile connections, were made.[19] Considering these figures, it is evident that Malaysia possesses the required hardware, internet, infrastructure, and telecommunication connectivity. The focus should be on developing a specific application that addresses the challenges associated with obtaining next-of-kin consent, as revealed in the study.

## CONCLUSION

The outcome of this survey highlights that the society of an urban setting in a developing country like Malaysia is prepared and keen to use telecommunication in discussing the consent for the urgent and semi-emergency neurosurgical operation of the next of kin rather than being physically present. This would enable the surgeon to perform the surgery more expediently. The respondents highlight trust in the medical system as a key feature in utilising such technology. These findings form a precursor to further studies to develop algorithms for a secure remote digital surgical consenting platform for urgent or semi-emergency surgical cases.

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