

## **Kertas Asli/Original Articles**

# **The Effectiveness of Using MySMS in Reducing No-show Rate in Dietetic Clinic, Hospital Sultan Ismail, Johor Bahru** (Keberkesanan Penggunaan MySMS dalam Mengurangkan Kadar Ketidakhadiran di Klinik Dietetik, Hospital Sultan Ismail, Johor Bahru)

ELIZA WONG YEN SIM, SURIYANTI MUHI, HASLIZAWANI ALI AKHBAR, NORLIZAWARNI JASMAWARDI,  
KOH YEE CHING, SALHA MOHAMED NOR, CHONG CHIN WEUN\*

### ABSTRACT

*No-show or non-attendance at outpatient appointments are one of the most challenging operational issues in health care clinics, including dietetics outpatient clinics. No-show has a negative impact on the efficiency and effectiveness of delivery of outpatient care in a hospital setting. This can negatively affect the patient's short term and long-term well-being due to missed opportunity to address the patient's nutrition issue in a timely manner. This study aims to investigate the reasons for no-show and thus to reduce the no-show rate in diet clinic from baseline of 40.7% to standard of less than 25%. The initial phase of the study was conducted from June to September 2017 at Hospital Sultan Ismail's diet clinic. No-show cases were identified using system data. No-show patients or guardian of no-show patients were contacted to record the reason for missing the appointments. Descriptive analysis was used to analyze the results. Strategy for change was planned and implemented to target the major reason for no-show. The pre-remedial phase result shows a no-show rate of 40.7%. A total of 102 patients were contacted (34%, n=102) to identify their reason of non-attendance to diet clinic. Paediatric patients aged 1 to 12 year-old contributed the highest percentage of no-show (37.3%, n=38). The major reasons identified for no-show are forgetting and remembered wrong appointment date (35.3%, n=36), followed by ill or admitted to ward (13.7%, n=14) and others (12.7%, n=13) such as personal issues and school examination. Remedial measure using Short Message Service (MySMS) resulted in a reduction of no-show rate to 22.2% which achieved our standard of less than 25% ( $p < 0.05$ ). Automated reminder using Short Message System (MySMS) is found to be effective in reducing no-show rate. Periodic audit is needed to ensure continuous effectiveness of remedial measure. Further studies need to be conducted in weighing the cost effectiveness of this method for long term run.*

*Keywords: No-show; diet clinic; Short Message System; automated reminder*

### ABSTRAK

*Ketidakhadiran di klinik pesakit luar merupakan salah satu isu di klinik pesakit luar termasuk klinik dietetik. Ketidakhadiran pesakit memberi kesan negatif terhadap keberkesanan perkhidmatan pesakit luar di hospital. Ini bukan sahaja akan mempengaruhi kesihatan pesakit dalam jangkamasa pendek tetapi juga akan memberi kesan jangkamasa panjang disebabkan ketidakhadiran temujanji untuk menangani isu pemakanan dalam masa yang tepat. Kajian ini adalah untuk mengenal pasti sebab dan seterusnya mengurangkan kadar ketidakhadiran di klinik dietetik daripada 40.7% kepada piawaian kurang daripada 25%. Fasa pertama kajian ini dijalankan dari Jun hingga September 2017 di klinik dietetik Hospital Sultan Ismail, Johor Bahru. Kes ketidakhadiran telah dikenalpasti menggunakan data dalam sistem. Pesakit atau penjaga yang tidak hadir telah dihubungi untuk mendapatkan sebab utama ketidakhadiran. Keputusan telah dianalisis secara deskriptif. Langkah penambahbaikan telah dirancang dan diimplementasikan bagi mengatasi sebab utama ketidakhadiran. Fasa pertama menunjukkan kadar ketidakhadiran sebelum langkah penambahbaikan adalah sebanyak 40.7%. Seramai 102 pesakit telah berjaya dihubungi (34%, n=102) untuk mengenalpasti sebab utama ketidakhadiran. Pesakit kanak-kanak berumur dari setahun hingga 12 tahun telah menyumbang kepada kadar ketidakhadiran yang paling tinggi (37.3%, n=38). Sebab utama ketidakhadiran adalah lupa tarikh temujanji atau mengingati tarikh yang salah (35.3%, n=36), diikuti dengan sakit atau masuk wad (13.7%, n=14) dan lain-lain (12.7%, n=13) seperti isu persendirian dan juga peperiksaan sekolah. Penggunaan Sistem Pesanan Ringkas (MySMS) sebagai langkah penambahbaikan berjaya mengurangkan kadar ketidakhadiran kepada 22.2% ( $p < 0.05$ ) dan mencapai standard yang ditetapkan. Peringatan automatik menggunakan Sistem Pesanan Ringkas (MySMS) adalah berkesan dalam mengurangkan kadar ketidakhadiran. Audit berkala perlu dilakukan bagi memastikan*

*keberkesanan secara berterusan. Kajian akan datang adalah perlu bagi memastikan keberkesanan kos kaedah ini bagi jangka masa panjang.*

*Kata Kunci: Ketidakhadiran; klinik diet; Sistem Pesanan Ringkas; peringatan automatik*

## INTRODUCTION

No-show or non-attendance at outpatient appointments are common occurrences in health care clinics, including dietetics outpatient clinics. No-show in outpatient clinics is defined as patients who failed to attend their scheduled clinic appointments (Mohamed et al. 2016). Studies have shown that high no-show patients increase costs of care delivery, wasted appointment time slots, increases the waiting time for other patients, delays early detection of early signs and symptoms of complications (Murdock et al. 2002), underutilization of personnel, reduced patient satisfactory and negative relationship between patients and staff (McLean et al. 2016). In this regard, no-show of the patients directly reduces the efficiency and effectiveness of delivery of outpatient care in hospital setting. This can negatively affect patient's short term and long-term well-being due to missed opportunity to address patient's nutrition issue in a timely manner (Mohamed et al. 2016).

Data on non-attendance can be vary, however studies from around the world consistently report non-attendance rates of between 15 to 30% in outpatient health clinics (Mohamed et al. 2016). Salameh et al. (2012) reported that up to 35% of patients did not keep their follow up appointments in mid-2000. Other studies examining patients' attendance in Europe have reported missed appointments rate of 5 to 55% depending on the country, healthcare system or clinical setting (Waller & Hodgkin 2000; Sharp & Hamilton 2001; George & Rubin 2003). It is similar case with worldwide dietetics outpatient in which a study showed one in three diabetic patients missed their dietetics clinic appointment (Spikmans et al. 2003). Previous studies identified the factors that contribute to no-show include long waiting time till schedule appointment, long waiting time in the healthcare setting, forgetfulness, time constraints or conflict, transportation, weather and patient's emotions, negative perception towards healthcare giver (Zeng et al. 2013).

To the best of our knowledge, there is currently no national or state data regarding the average no-show rates in dietetics outpatient clinic in hospital settings. In a single retrospective survey done during two separate consecutive periods of time at Hospital Sultan Ismail, Johor Bahru (HSIJB) it was found that the average no-show rate from March 2015 to June 2015 was 47.7% while the average no-show rate from January 2017 to April 2017 was 35%. Hence, we have identified it be an issue that needed to be

improved in HSIJB diet clinic attendance. This study aims to investigate the reasons for no-show and thus to reduce the no-show rate in diet clinic by targeting the major causes of no-show.

## METHODOLOGY

### STUDY DESIGN

This study is a prospective sequential audit consisting of two-phase which are initial phase and post-remedial phase. The study was conducted at Hospital Sultan Ismail, Johor Bahru Diet Clinic. The initial phase of the study was conducted from June to September 2017. The post-remedial phase was conducted in January 2019. Sample size is calculated using Sample Size Calculator for Prevalence Studies with level of confidence 95% and precision level of 0.10 (power 90%). Based on our baseline data from 2017 with prevalence of 35%, the minimal sample size required is 89. The actual sample size obtained for the initial phase was 102. Inclusion criteria for subjects' selection included Malaysians, no-show patients or guardian of no-show patients, able to be contacted via telephone call, willing to respond to survey on reason of no-show. Exclusion criteria included non-Malaysians and unable to be contacted via the telephone call.

### PROCEDURES OF DATA COLLECTION

The study was registered under National Medical Research Register (NMRR-17-1175-36391 S1). Data collection was started from June 2017. From a total of 738 scheduled appointments within data collection period, 300 no-show cases were identified. Socio demographic information includes personal information of patients and demographic data such age, gender, race and others were collected was obtained from system data. No-show cases with contact number were filtered out using system and called within 7 days from the day of missed appointment. A total of 150 patients were able to be contacted via telephone and 102 of them were willing to participate in the study. Reasons for missing appointments were then recorded. Statistical Package for Social Study version 20.0 (SPSS Inc., Chicago, IL, USA) was used to carry out statistical analysis for the data collected. The descriptive statistic was carried out to present data on socio-demographic information. Chi-square

test was used to determine the statistical difference between two phases. The confidence interval of 95% ( $p < 0.05$ ) was used to indicate the significant differences.

## RESULTS

The initial phase result shows a no-show rate of 40.7% as shown in Figure 1. From the total of 300 identified no-

show cases, 102 no-show patients or guardian of no-show patients were able to be contacted for the study (34%,  $n=102$ ). The demographic information of no-show patients in the dietetics clinic during the initial phase of the study are showed in Table 1. According to the gender group, majority of the no-show patients were female (63.7%,  $n = 65$ ). Paediatric patients aged > 1 to 12 years contributed the highest percentage of no-show (37.3%,  $n = 38$ ). Figure 2 shows the percentage of factors contributing to patients'

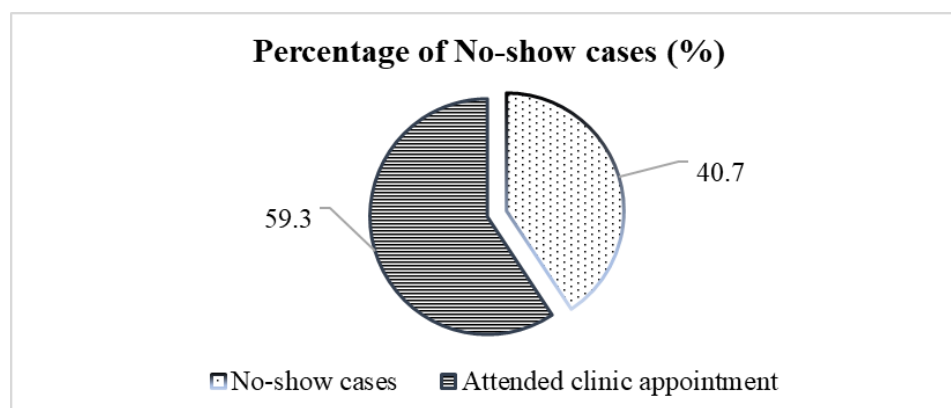


FIGURE 1. Percentage of no-show cases in HSIJB diet clinic

TABLE 1. Demographic information of no-show patients

Demographic Variables	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	37	36.3
Female	65	63.7
<b>Age group (years)</b>		
0 – 1	5	4.9
> 1 – 12	38	37.3
> 12 – 18	8	7.8
> 18 – 40	28	27.5
> 40 – 60	16	15.6
> 60	7	6.9
<b>Discipline</b>		
Otorhinolaryngology	4	3.9
Medical	17	16.7
Nephrology	1	1.0
Oncology	3	2.9
Ophthalmology	1	1.0
Orthopedic	4	3.9
Paediatric	50	49
Psychiatric	3	3
Obstetrics & Gynaecology	15	14.7
Surgical	2	1.9
Dermatology	1	1.0
Other healthcare clinic /hospital	1	1.0

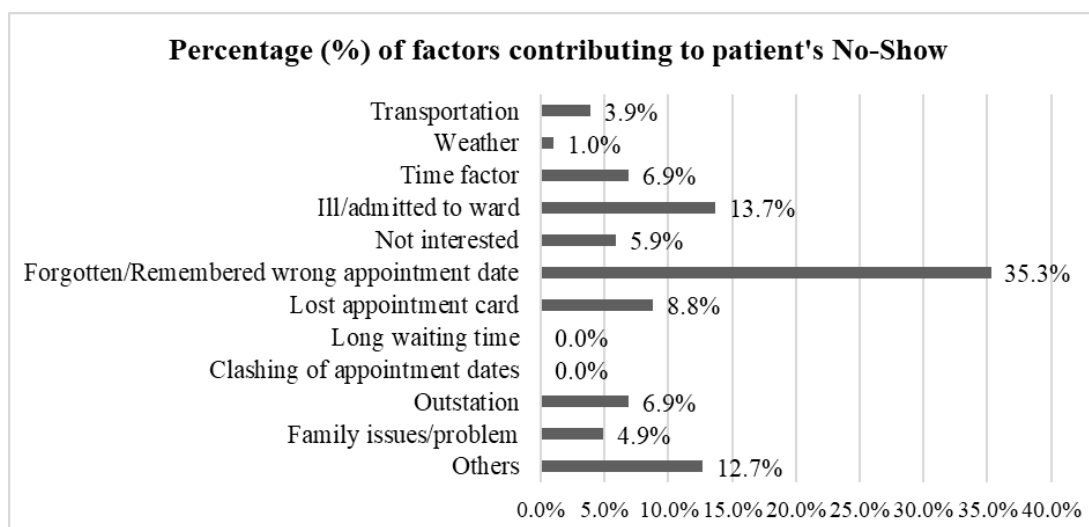


FIGURE 2. Percentage (%) of factors contributing to patients' no-show

no-show during the initial phase. The major reasons identified for no-show are forgetting and remembered wrong appointment date (35.3%, n=36), followed by ill or admitted in ward during clinic appointment (13.7%, n=14) and others (12.7%, n=13) such as personal issues and school examination.

#### RE-AUDIT RESULTS AFTER IMPLEMENTATION OF CHANGE

From a total of 167 scheduled appointments in January 2019, only 37 no-show cases were noted. The post-remedial phase which was our re-audit phase resulted in a reduction of no-show rate to 22.2% ( $p < 0.05$ ), which achieved our standard of less than 25 %.

#### DISCUSSION

The results from this clinical audit shows a high of no-show rate which were consistent with previous studies no-show rates ranging between 15 to 30% in outpatient health clinics (McLean et al. 2016). The reasons of show stated by the participants of the study also were congruent to studies that examine the causes of no-show at healthcare outpatient clinics as found in studies by Mohamed et al. (2016) and Zeng et al. (2013). Survey evidence indicates that the main reason for a no-show or missed appointment is the patient forgetting their appointment (Murdock et al. 2002). Similarly, our study had consistent results whereby the major reason of no-show was patients or guardian of patients forgetting or remembered wrong appointment date.

With such results, it is therefore expected that reminders of the outpatient appointment could significantly increase

the attendance rate. Attention has also focused on the effective use of reminders worldwide. A systematic review of interventions such as telephone or mailed reminders, double booking or shadow appointments, and advanced access scheduling showed mixed success in lowering no-show rates (Macharia et al. 1992). Various methods of patient reminders have been studied such as posted letters, automated phone calls, and personalized phone calls. Most of these studies have shown a significant reduction in non-attendance rates regardless of the setting or method used, but they were labor intensive (Lee & McCormick 2003; Haynes & Sweeney 2006). Many primary care clinics have adopted overbooking to deal with their prevalent no-show problem. While overbooking reduces appointment delay, it increases waiting time at clinic (Zeng et al. 2013). Short messaging service (SMS), a rapidly spreading technology in both developed and developing countries has the potential to reach large number of individuals at a relatively low cost. A randomized controlled trial had found that the use of SMS appointment reminders was effective in reducing outpatient non-attendance and more cost-effective than other phone reminder methods (Youssef et al. 2014).

Therefore, in this study, we have also selected a remedial measure using Short Message Service (SMS) via an existing SMS system used by other healthcare clinics in HSIJB and other government agencies as it was less labour intensive compared to other methods. SMS text messaging also provides the ease of customizing large number of messages with low cost. Systematic reviews have found that telephone and Short Message Service (SMS) reminders significantly reduce non-attendance, although a recent Cochrane Review judged that the quality of existing evidence is only of low to moderate quality (Hasvold & Wootton 2011; Gurol-Uganci et al. 2013).

To the best of our knowledge, this is the first study in Malaysia using SMS reminders as remedial measure to reduce the no-show cases of outpatient diet clinic. The limitation of this study was the sample size only represents the population of outpatients in the diet clinic in Hospital Sultan Ismail, Johor Bahru in the southern region of Malaysia. The findings may not represent the overall population of dietetics outpatients in Malaysia and may not be applicable for the patients in other institutions. Nevertheless, the findings of the study do demonstrate the high occurrences of no-show for outpatient dietetic services and thus highlight the importance of implementation of reminders or other remedial measures to improve the attendance rate in dietetic clinic. Further in-depth studies in comparing the attendance rate of patient between those who received automated reminders and those who did not can be further evaluated and confirm the efficiency of the SMS system. In addition, further studies can be conducted in weighing the cost effectiveness of this method for long term run in order to confirm the reduction in no-shows compensates for the increased cost of using an automated reminder system. Health outcomes, patients' and healthcare providers' evaluation and perceptions of the safety of the interventions, potential harms, and adverse effects of mobile phone messaging reminders can also be assessed.

## CONCLUSION

No-show appointments are found to be prevalent. Remedial measure using mobile phone text messaging reminders can increase the attendance at healthcare appointments for outpatient dietetics services. Although formal evidence of cost-effectiveness is lacking, the implication of this study shows that other hospitals should consider using automated reminders to reduce the no-shows. However, periodic audit is needed to ensure the sustainability of effectiveness of mobile phone text messaging reminders.

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Eliza Wong Yen Sim  
Suriyanti Muhi  
Haslizawani Ali Akhbar  
Norlizawarni Jasmawardi  
Koh Yee Ching  
Salha Mohamed Nor  
Chong Chin Weun

Dietetics and Food Service Department  
Hospital Sultan Ismail  
Jalan Mutiara Emas Utama  
Taman Mount Austin  
81100 Johor Bahru, Johor Malaysia

Corresponding Author: [chongchinweun@gmail.com](mailto:chongchinweun@gmail.com)