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AUTOMATED SCHEDULING SOFTWARE IN PRIVATE DENTAL PRACTICE - A SURVEY

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ABSTRACT

Automated scheduling software is a software that can store and track patient information.It keeps patient information and details secure and it is also easy to retract. It eases booking appointments precisely and in an organised manner. It caters to the patient's needs and makes work easier at private practices where the workforce is limited. It is very efficient and time saving. It makes sure no patient skips any appointments by giving regular reminders and effectively manages no show and cancellations. A self-administered questionnaire was prepared comprising 10 questions and circulated to about 100 people through an online google forms link.. The questions were studied carefully and corresponding answers were marked by the participants. The data was collected and analysed using the SPSS Software version 20.0 . Most of the respondents preferred automated scheduling and online booking appointments. The respondents find it useful when reminders are given. About 90% of the participants think that they will visit clinics more regularly if reminders are given often. This outright proves to be a positive result. The patients who skip appointments mostly do it

because they forget about their schedule. With regular reminders and instructions, they will follow up and improve their visit to the clinics.

INTRODUCTION

This article aims to explain the aspects of scheduling systems within the general context of hospital or health care facility management, reviewing the history of the patient using this software and for scheduling nurses and patients, to perfect the administration using automated scheduling and to review the system and its many other helpful applications.

It is a method of analyzing appointments and patient-friendly choices for the allocation and reminder of appointments by means of computer software. It mainly focuses on 3 essential requirements, dealing sequentially with requests for admission, scheduling, and delivery of reminders and instructions prior to their treatment. The feasibility of using the scheduling program in a real-time automated patient-scheduling system is discussed, with indications of adaptations required and additional functions that could be handled by the system.Automated scheduling software is a program software that can store and track patient information (Palati*et al.,* 2020). It keeps patient details secure and they can be retracted easily at any time (Shree *et al.*, 2019; Palati*et al.*, 2020). It is easier than manually searching for files for any patients (Prasanna and Gheena, 2016). It is easier at private practices where there is a limited workforce (Abitha and Santhanam, 2019). Their software system also caters to patient needs by sending them regular reminders about their appointment schedule (Uma *et al.*, 2018; Abitha and Santhanam, 2019). It can also use instructions from the clinic about what to do and what they should refrain from doing before or after the treatment (Krishnan *et al.*, 2018; Uma *et al.*, 2018; Abitha and Santhanam, 2019). It is very efficient, precise and time-saving (Martins, 2006; Kousalya, Balakrishnan and Pethuru Raj, 2017)(Hannah *et al.*, 2018). It even ensures that a canceled appointment is rescheduled conveniently and fits another appointment in the cancelled hour thereby avoiding no show (Palati*et al.,* 2019)(Gaspero*et al.,* 2013)(Martins, 2006).

This is a novel study, there is no study which has been done on automated scheduling software used in private dental practices (Gunasekaran and Abilasha, 2016; Hannah *et al.*, 2018)(Pesch, 1994). There have been previous studies made on the no-show rate at primary care clinics run by a student and another one about how patients prefer to be reminded through text messages (Gunasekaran and Abilasha, 2016; Hannah *et al.*, 2018; Palati*et al.,* 2020). The purpose of this study is to improve patient inflow and avoid missing appointments, efficiently booking and managing appointments and cancellations, reducing the no-show rate and reminding patients about their scheduled appointment (Harrita and Santhanam, 2019)(Ahad and Gheena, 2016).

MATERIALS AND METHODS

An online survey was conducted with a self-structured questionnaire which is circulated to about 100 people with questions based appointment scheduling cancellations and mode of reminders. The study setting is an online setting which is a sectional observational study. The pros are minimised error, cost-free process of circulating the survey and obtaining results and it is also possible to collect larger data. The cons are that the survey could provide irrelevant options and the respondent or participant may skip questions. It is approved by the Scientific Review Board. Non-probability convenient sampling was the sampling method used. The measure is taken to minimise the sampling bias. The data collection or tabulation of the survey for a questionnaire consisted of a self-constructed questionnaire containing 10 questions. The internal validity was checked by giving the questionnaire to 3 staff from the college and the validity was checked. The external validity was checked by giving the questionnaire to 3 random people.The data collection software used was the Survey Planet for descriptive statistics and SPSS version 20. The list of output variables to be assessed was the knowledge, awareness and perception. The method of preservation of each output used was through pie charts. The statistical test used was descriptive statistics and then for gender based response analysis a chi-square test was performed. Gender was considered as independent variables against the list of dependent variables including knowledge, awareness and perception.

RESULTS AND DISCUSSION

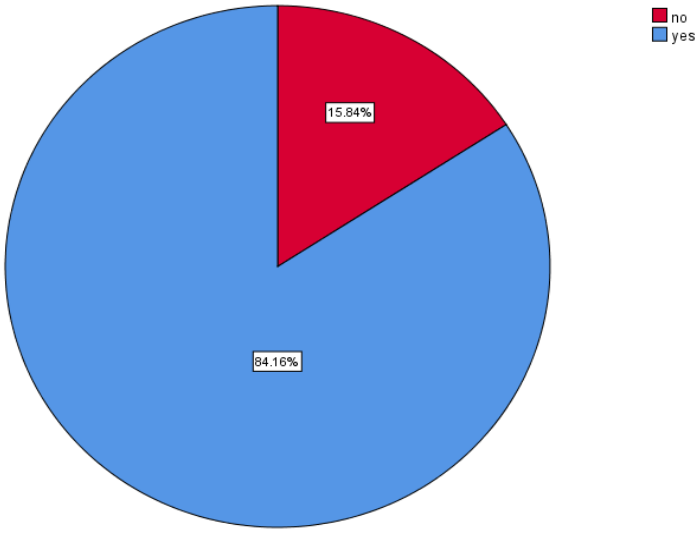

FIGURE 1 Pie chart represents the percentage distribution of responses for the reasons for missing appointments. 84.2% of the participants agreed to missing appointments because they forget while 15.8% say it's because of other reasons.

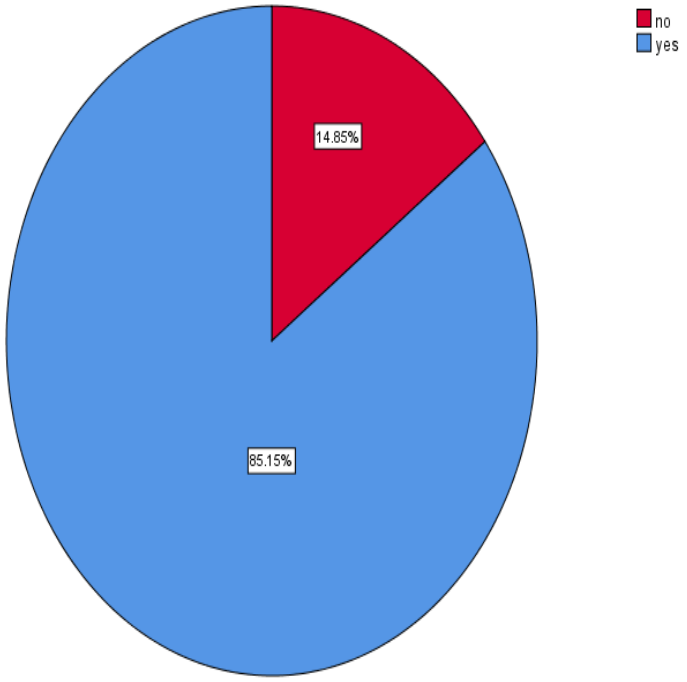

FIGURE 2 Pie chart represents the percentage distribution of responses for regular visits. 85.1% agreed to visiting clinics dental clinics regularly while 14.9% said they don't visit clinics regularly.

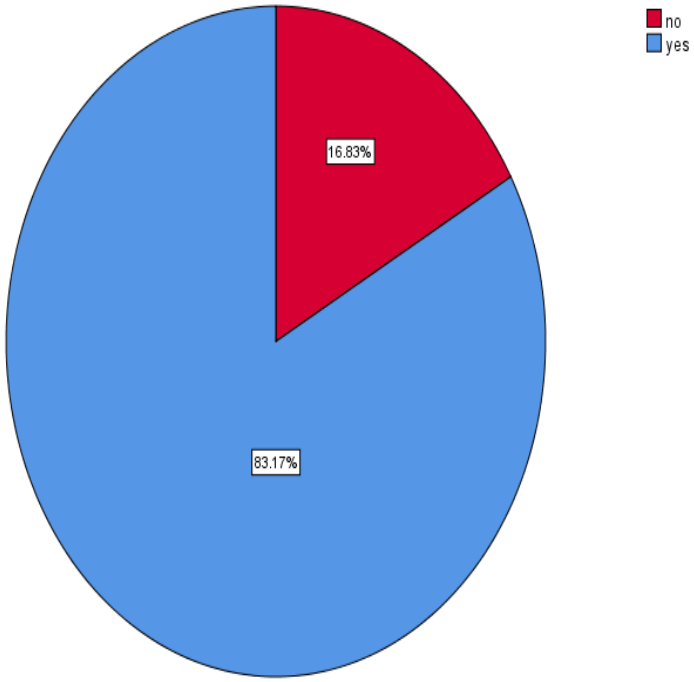

FIGURE 3 Pie chart represents the percentage distribution of responses for reminders about appointments. 83.2% of the participants agreed that it's useful when reminders are given about their appointments while 16.8% didn't think so.

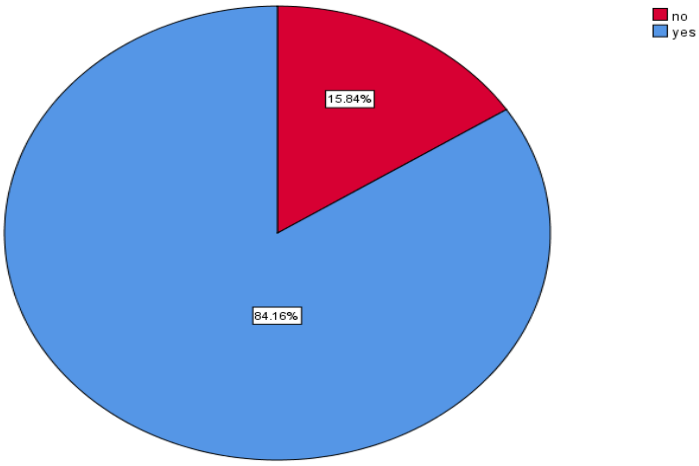

FIGURE 4 Pie chart represents the percentage distribution of responses for preference of text message- reminders. 84% of the participants agreed to preferring text message reminders while it wasn't preferred by 15% of the participants.

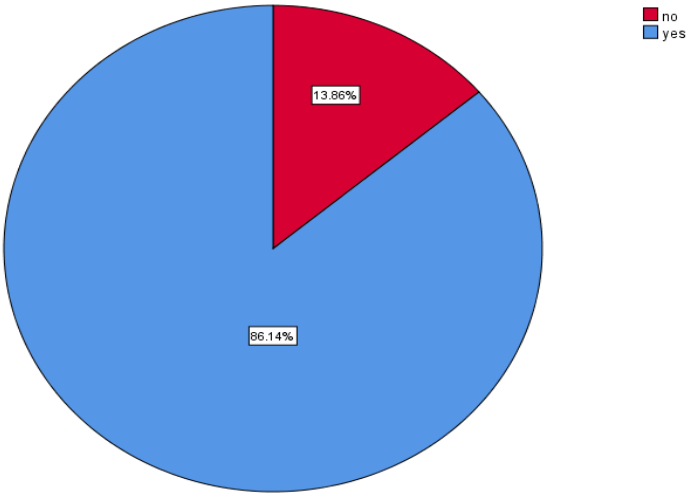

FIGURE 5 Pie chart represents the percentage distribution of responses for effectiveness of call reminders. 86% of the participants thought that call reminders are more effective while 14% didn't think so.

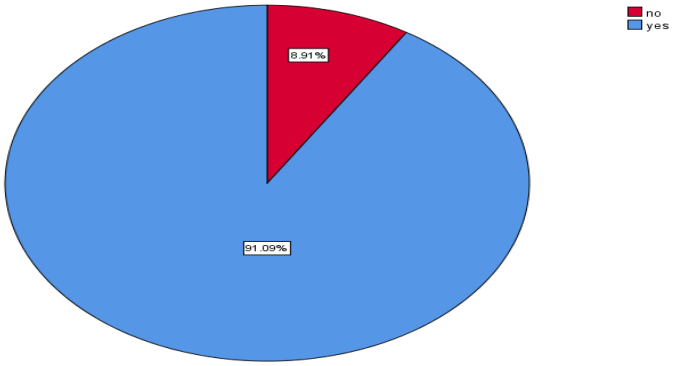

FIGURE 6 Pie chart represents the percentage distribution of responses for instructions regarding appointment. 91% of the participants said that they would like to be sent instructions about their treatment while 9% didn't think so.

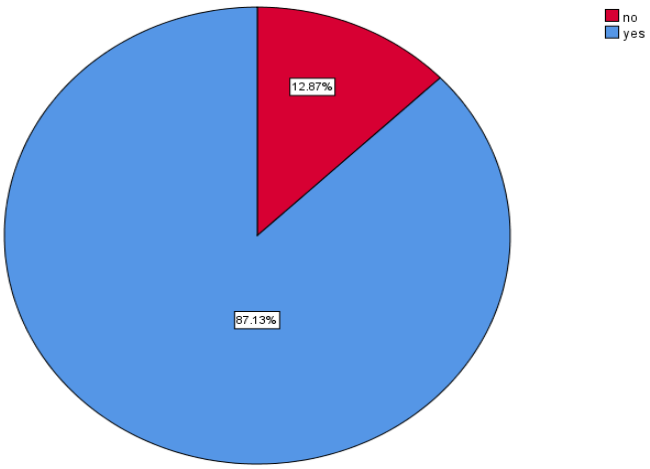

FIGURE 7 Pie chart represents the percentage distribution of responses for online booking of appointments. 87% of the participants found it easier to book appointments online while 13% didnt think so.

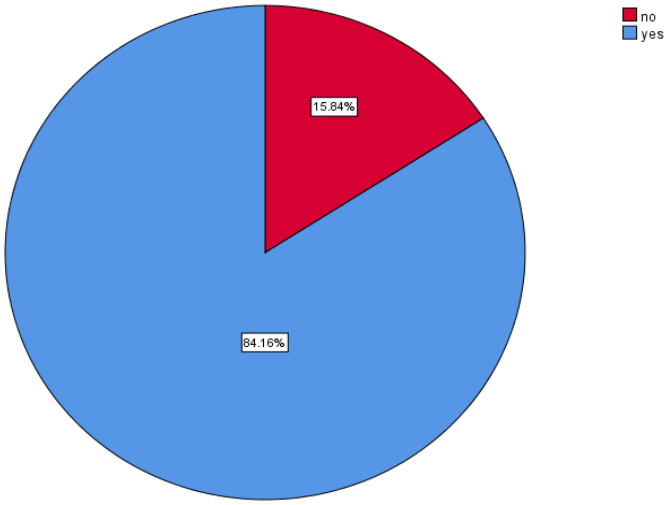

FIGURE 8 Pie chart represents the percentage distribution of responses for online cancellation of appointments. 85% of the participants think that it is efficient to cancel appointments online while 16% didnt think so.

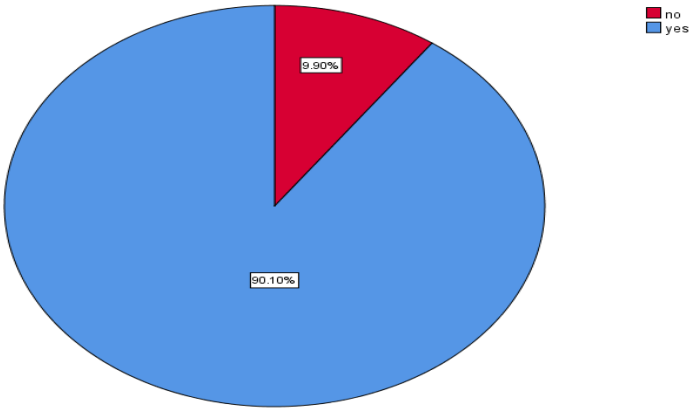

FIGURE 9 Pie chart represents the percentage distribution of responses for visiting often when reminders are given frequently. 90% of the participants think that they will visit the clinics more often if they are reminded frequently while 10% didn't think so.

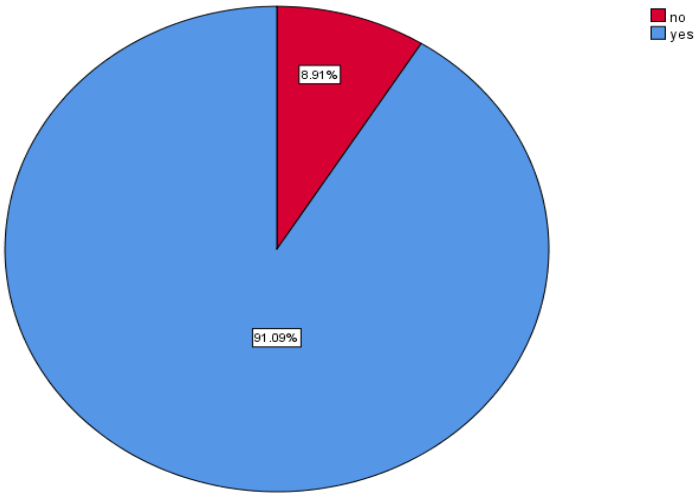

FIGURE 10 Pie chart represents the percentage distribution of responses for rescheduling appointments online. 91% of the participants would like to be intimated if another patient cancels their appointment and if there was a chance they could be rescheduled later.

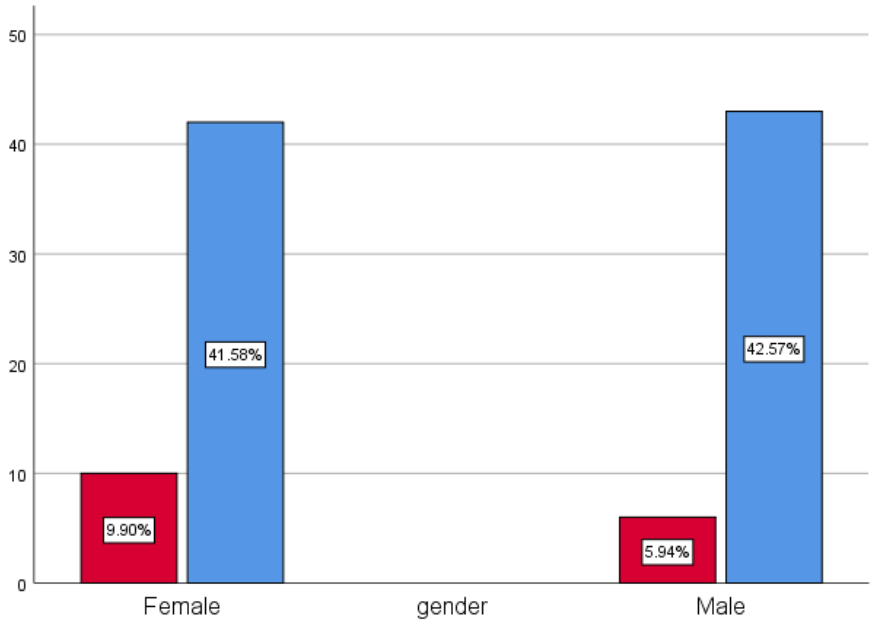

FIGURE 11 Bar chart represents the association between gender and the reason for skipping appointments. X axis represents Gender ,Y axis represents individuals who forgot about their appointment (blue) and those who had other reasons (red). Out of 100 participants, only 43% of male and 42%of female participants were those who forgot about their appointment and hence skipped their appointment. The association between the variables was found to be statistically not significant [Pearson's Chi square analysis = 102.933 , P value= .384 (<0.05)]. Majority of the male participants forgot about their appointments and hence skipped it.

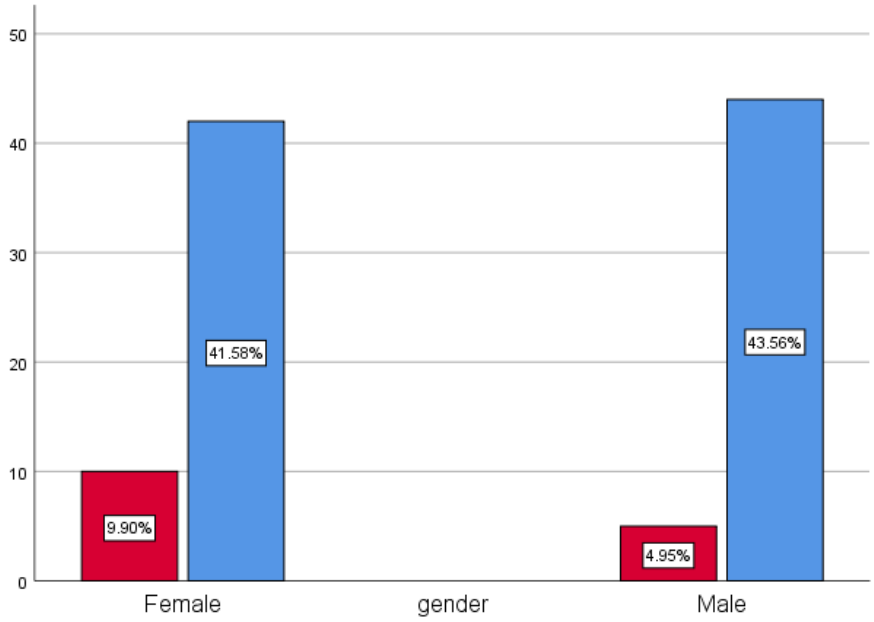

FIGURE 12 Bar chart represents the association between gender and whether they visited dental clinics regularly. X axis represents Gender ,Y axis represents individuals who visited dental clinics regularly (blue) and those who did not (red). Out of 100 participants, only 41% of female and 43 %of male participants acknowledged visiting dental clinics regularly. The association between the variables was found to be statistically not significant [Pearson's Chi square analysis = 103.642 , P value= .421 (<0.05)]. Majority of the male participants visited dental clinics more regularly.

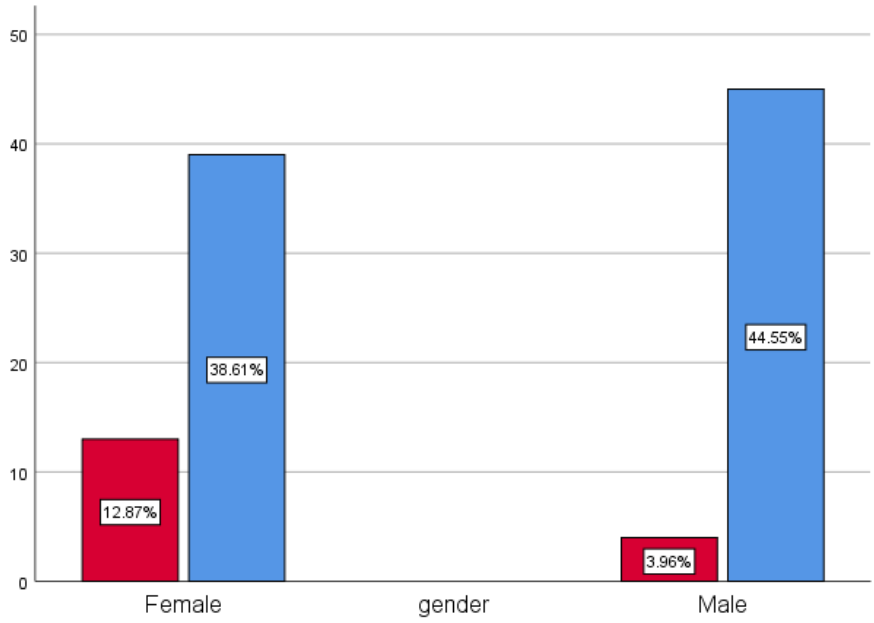

FIGURE 13 Bar chart represents the association between gender and whether they would find it useful if frequent reminders were given in order to avoid missing appointments. X axis represents Gender, Y axis represents individuals who were open to the idea of receiving reminders (blue) and those who were not (red). Out of 100 participants, only 44% of male and 38% of female

participants were open to the idea of receiving reminders about their appointments. The association between the variables was found to be statistically not significant [Pearson's Chi square analysis = 107.159 , P value= .298 (<0.05)]. Majority of the male participants said that they would find it useful if frequent reminders were given in order to avoid missing appointments.

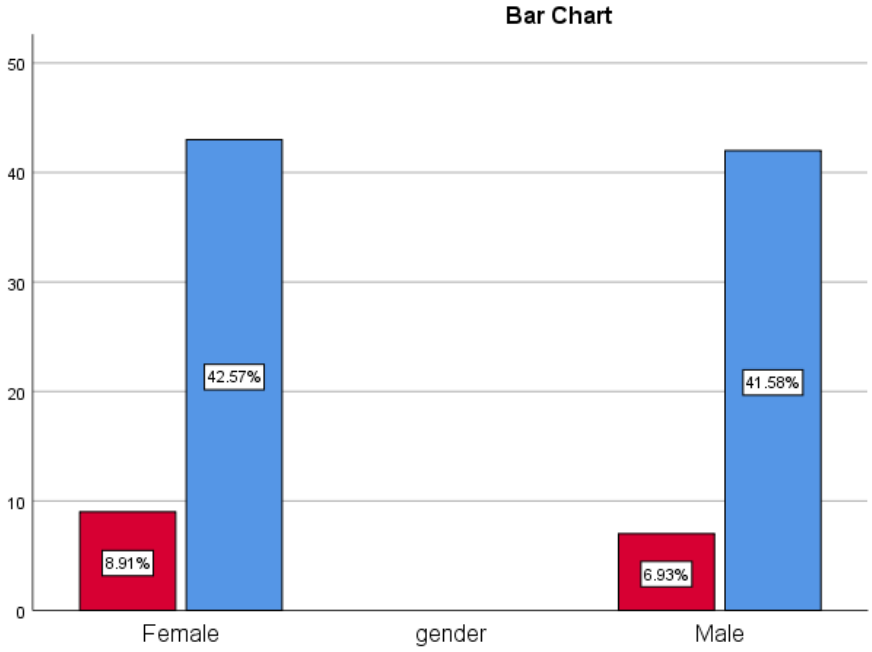

FIGURE 14 Bar chart represents the association between gender and their preferences on text messages for reminders. X axis represents Gender ,Y axis represents individuals who preferred text messages for reminders (blue) and those who did not prefer them (red). Out of 100 participants, only 41% of male and 42%of female participants were those who forgot about their appointment and hence skipped their appointment. The association between the variables was found to be statistically not significant [Pearson's Chi square analysis =102.175 , P value= .566(<0.05)]. Majority of the female participants preferred text messages for reminders.

In this study, the results were collected and data was analysed. The majority of respondents wanted automated scheduling practices (Bitzan and Gernot Bitzan, 1999; Ghallab, Nau and Traverso, 2004). These systems ensured that patients do not skip dental appointments.(Bitzan and Gernot Bitzan, 1999) The total respondents responded positively about the effectiveness of reminders and their comfortableness in booking appointments online (Lin and Hodak, 1979; Martins, 2006; Kousalya, Balakrishnan and Pethuru Raj, 2017)(Faw, 1977)(Shree *et al.*, 2019)(Prasanna and Gheena, 2016; Shree *et al.*, 2019)(Palati*et al.*, 2020)(Gunasekaran and Abilasha, 2016; Sarbeen, InsiraSarbeen and Gheena, 2016; Hannah *et al.*, 2018; Krishnan *et al.*, 2018; Abitha and Santhanam, 2019; Palati*et al.*, 2019).

This study questions about people visiting to dental clinics regularly.(Ahad and Gheena, 2016) Another study had similar findings (Faw, 1977; Bester, 2009; Küçük, Güney and Ponomarev, 2013; Savransky, 2013)(Ahad and Gheena, 2016; Padavala and Sukumaran, 2018; Harrita and Santhanam, 2019; Manohar and Abilasha, 2019). The overall consensus on this study was to get knowledge on the regularity of patients. This study has proven how efficient booking appointments online is and also giving regular reminders (Sheriff, Ahmed Hilal Sheriff and Santhanam, 2018; Manohar and Abilasha, 2019). Previous literature has similar findings, the overall consensus of this survey is that it talks about patient preferences on booking appointments and mode of reminder (Padavala and Sukumaran, 2018). This study questions the respondents if they will visit clinics more regularly when details are coordinate online (Bester, 2009). The previous literature with similar findings, the overall consensus are that the survey reveals patients want online booking of appointments and will improve their visits and regularity to clinics (Manohar and Abilasha, 2019).

From the figures:
Figure 1 depicts that when asked if you visit dental clinics regularly, 84% of the participants said yes, there do. Figure 2 shows that when asked what is the reason why they miss appointments, 85% of the participants said because they forgot (Awajan, 2013). Figure 3 depicts that when asked do you think it is useful when reminders are given, 83% of the participants said yes. Another study also has the same opinion. Figure 4 shows that when asked if they prepare text messages as reminders, 84% of the participants said they would prefer it. Another study shows similar results (Hoppen, 1974; Faw, 1977)(United States. Congress. House. Committee on Veterans' Affairs. Subcommittee on Oversight and Investigations, 1984). Figure 5 shows that when asked if call reminders would be more effective, 86% of the people agreed that calls would be more effective (Lin and Hodak, 1979). Figure 6 depicts that when asked would you like to be sent instructions needed before/ after your treatment, about 91% of the participants thought it would be very effective (Savransky, 2013). Figure 7 shows that when asked if you find it easier to book appointments online, about 87% of the participants agreed so (Faw, 1977; Savransky, 2013). Another study shows the same views. Figure 8 depicts that when asked do you find it efficient to cancel online, about 84% agreed that it was efficient (Graham, no date; Faw, 1977; Küçük, Güney and Ponomarev, 2013; Petrovic*et al.*, 2013; Savransky, 2013). Figure 9 shows that when asked if they will visit clinics more regularly when reminders are given, 90% of the total participants agreed that they wouldn't skip appointments (Faw, 1977; Küçük, Güney and Ponomarev, 2013; Petrovic*et al.*, 2013; Savransky, 2013). Figure 10 shows that when asked if you would like to be intimated if another patient cancels their appointment and you could shift your appointment, 91% of the participants showed their support (Faw, 1977; Küçük, Güney and Ponomarev, 2013; Savransky, 2013)(Bitzan and Gernot Bitzan, 1999)(Tobias, 1972)(Tobias, 1972; Hall, 2011)(Winston and Sommers, 2014).
Figure 11 represents the association between gender and their reason for skipping appointments. 41% of male and 42%of female participants were those who forgot about their appointment and hence skipped their

appointment. The association between the variables was found to be statistically significant [Pearson's Chi square analysis = 102.933 , DF- 4 , P value= .000 (<0.05)]. Figure 12 represents the association between gender and whether they visited dental clinics regularly. 41% of female and 43 %of male participants acknowledged visiting dental clinics regularly. The association between the variables was found to be statistically significant [Pearson's Chi square analysis = 103.642 , DF- 4 , P value= .001 (<0.05)]. Figure 13 represents the association between gender and whether they would find it useful if frequent reminders were given in order to avoid missing appointments . X axis represents Gender ,Y axis represents individuals who were open to the idea of receiving reminders (blue) and those who were not (red). Out of 100 participants, only 44% of male and 38% of female participants were open to the idea of receiving reminders about their appointments. The graph depicts the fact that there wasn't a significant difference between males and females. The association between the variables was found to be statistically significant [Pearson's Chi square analysis = 107.159 , DF- 4 , P value= .000 (<0.05)]. Figure 14 represents the association between gender and their preferences on text messages for reminders. X axis represents Gender ,Y axis represents individuals who preferred text messages for text reminders (blue) and those who did not prefer them (red). Out of 100 participants, only 41% of male and 42%of female participants were those who forgot about their appointment and hence skipped their appointment. The graph depicts the fact that there wasn't a significant difference between males and females. The association between the variables was found to be statistically significant [Pearson's Chi square analysis =102.175 , DF- 4 , P value= .000 (<0.05)].

LIMITATIONS

The limitations of their study are that minimum articles are included and the study population is limited. Results may vary with a bigger population. The use of smartphone applications and SMS services may not be available to everyone making their presence and opinions unrecorded.

FUTURE SCOPE

This study helps to understand public preferences and makes the scheduling work easier and more efficient.

CONCLUSION

This study was conducted to understand the public preferences and their peers views on the automated scheduling software and if they would visit clinics regularly is reminded often.

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