



PROCEEDINGS

The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

Universitas Muhammadiyah Yogyakarta (Indonesia)

October 13 - 14 2020

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Focal Conferences



- ✔ (ICPU) The 2nd International Conference on Pharmaceutical Updates
- ✔ (ICOMS) The 6th International Conference on Management Sciences
- ✔ (ICLAS) The 9th International Conference on Law and Society
- ✔ (ICMHS) The 4th International Conference Medical and Health Sciences
- ✔ (ICAF) The 6th International Conference for Accounting and Finance
- ✔ (ILEC) The 2nd International Language and Education Conference
- ✔ (ICONURS) The 2nd International Conference on Nursing
- ✔ (ICITAMEE) The 1st International Conference on Information Technology, Advanced Mechanical and Electrical Engineering
- ✔ (IConARD) International Conference on Agribusiness and Rural Development
- ✔ (ISHERSS) The 2nd International Symposium on Social Humanities Education and Religious Sciences
- ✔ (ICONPO) The 10th International Conference on Public Organization
- ✔ (DREAM) The 5th Dental Research and Exhibition Meeting
- ✔ (ICHA) The 5th International Conference on Hospital Administration
- ✔ (ICOSA) The 3rd International Conference on Sustainable Agriculture





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Preface by the Chairperson of the 4th ICoSI 2020



Dr. Yeni Rosilawati, S.IP. S.E., MM.

Assalamu'alaikum Wr. Wb.

All praise is due to Allah, the Almighty, on whom we depend for sustenance and guidance. Prayers and peace be upon our Prophet, Muhammad SAW, his family and all of his companions.

On behalf of the organizing committee, it is my pleasure and privilege to welcome the honourable guests, distinguished keynote & invited speakers, and all the participants.

With the main theme of “Cutting-Edge Innovations on Sustainable Development Goals (SDGs)”, the 4th International Conference on Sustainable Innovation (ICoSI) 2020 serves as a forum to facilitate scholars, policy makers, practitioners, and other interested parties at all levels from Indonesia and abroad to present their novel ideas, promote cutting-edge research, and to expand collaboration network. The conference has about 1373 participants participating from more than 8 countries 4 continents all over the world, making this conference a truly international conference in spirit.

This multidisciplinary conference was first held in 2012 and has undertaken various changes and adopted to the current technological trends of our education system. From having this conference with just 175 participants back in 2012 we have come a long way in making the conference a huge success with more than 1373 participants participating in this two-day conference.

Formerly, this conference consisted of only 9 (nine) focal conferences. This year, there are 14 focal conferences from various disciplines, namely: 1) The 2nd International Conference on Pharmaceutical Updates (ICPU), 2) The 6th International Conference on Management Sciences

(ICoMS), 3) The 9th International Conference on Law and Society (ICLAS), 4) The 4th International Conference Medical and Health Sciences (ICMHS), 5) The 6th International Conference for Accounting and Finance (ICAF), 6) The 2nd International Language and Education Conference (ILEC), 7) The 2nd International Conference on Nursing (ICONURS), 8) The International Conference on Information Technology, Advanced Mechanical and Electrical Engineering (ICITAMEE), 9) The 2nd International Conference of Agribusiness and Rural Development (IConARD), 10) The 10th International Conference on Public Organization (ICONPO), 11) The 2nd International Symposium on Social Humanities Education and Religious Sciences (ISHERSS), 12) The 5th Dental Research and Exhibition Meeting (DREAM), 13) The International Conference on Hospital Administration (ICHA), and 14) The 3rd International Conference on Sustainable Agriculture (ICoSA).

Accordingly, We are proud to announce that this year, the 4th ICoSI 2020 breaks the Museum Rekor-Dunia Indonesia (MURI) record as the Virtual Multidisciplinary Conference with the Largest Number of Area of Fields in Indonesia

In addition, this year, this conference holds special value since this is the first conference in the history of our university where the entire conference is taking place remotely on a digital platform through the use of advance technologies due to the Covid-19 Pandemic.

I would take this opportunity to express my highest respect to the Rector of Universitas Muhammadiyah Yogyakarta, Dr. Gunawan Budiyanto who gave approval and ensured the maximal support from all the faculty members of Universitas Muhammadiyah Yogyakarta (UMY) that made this event a big success. In addition, my appreciation goes to all the support teams who have provided their valuable support and advice from planning, designing and executing the program.

Let me conclude my speech by encouraging the delegates to participate with an increasing number in all the activities and discussions through the digital platforms for the next two days. I wish everyone a successful, safe, and fruitful conference.

Thank you!

Wassalamu'alaikum Wr. Wb.

Yogyakarta, Indonesia, 14 October 2020



Welcoming Remarks by the Rector of Universitas Muhammadiyah Yogyakarta



Assoc. Prof. Dr. Gunawan Budiyanto

Innovation is the beginning of the development of technology, and technology is a development machine that is expected to provide benefits to humans and provide the smallest possible impact on environmental quality. In the concept of sustainable development, development must improve the quality of human life without causing ecological damage and maintain the carrying capacity of natural resources.

International Conference on Sustainable Innovation (ICoSI) is an international conference which is an annual conference held by the University of Muhammadiyah Yogyakarta (UMY), Indonesia. In 2020 this raises the issue of "Cutting-Edge Innovations on Sustainable Development Goals." Therefore, on behalf of all UMY academics, I would like to congratulate you on joining the conference, hoping that during the Covid-19 Pandemic, we can still provide suggestions and frameworks for achieving sustainable development goals.

About The 4th International Conference on Sustainable Innovation (ICoSI) 2020

Cutting Edge Innovations for Sustainable Development Goals

The 2030 Agenda for Sustainable Development is enacted by the United Nations as a shared blueprint for peace and prosperity for people and the planet, now and into the future. It consists of strategies to improve health and education, reduce inequality, and spur economic growth while also conserving natures by 2030.

This year, however, at the first one-third of its timeline, the SDG Reports shows that the outbreak of COVID-19 did hinder the achievement, or at least decelerate the progress of achieving the 17 goals. In fact, according to the report, “some number of people suffering from food insecurity was on the rise and dramatic levels of inequality persisted in all regions. Change was still not happening at the speed or scale required”, accordingly.

Therefore, in this event of pandemic, the quantity and quality of research, innovation, and more importantly multi-disciplinary collaboration are indispensable. Furthermore, there needs to be clear ends of those works. That is how those research are applicable and benefits directly to the society. That is how those research is incorporated as the drivers of policy making, and used practically in the society. Hence, the stakeholders especially the triple helix of higher education institution, government, and industry must be re-comprehended and supported to reach the common goal of the SGD.

International Conference on Sustainable Innovation (ICoSI) has been essentially attempting to strengthen this regard since its first establishment. One of the goals of ICoSI is to provide primarily a platform where scholars, practitioners, and government could grasp the development and trends of research. Hopefully, meeting these actors altogether would result in stronger collaboration, sophisticated and advantageous research, and brighter ideas for further research. Based on these reasoning, this year, the 4th ICoSI 2020 UMY is themed ‘Cutting-edge Innovations for Sustainable Development Goals’.

Improving from last year conference which brought nine focal conference, this year ICoSI 2020 UMY brings 14 disciplines, from social sciences, natural sciences, and humanities. ICoSI 2020 received as much as 1005 papers. The paper works submitted in ICoSI 2020 UMY will be published in Atlantis Proceedings, IOP Proceedings, National/International Journals, and ICoSI ISBN-indexed Proceedings.

Nevertheless, ICoSI believes that publication is only the beginning of research dissemination. The publications will enhance the chance of the research known by wider audience, and then used, applied, and incorporated at either system, institutional, or personal level of human lives.



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TRACK ECONOMICS, LAW, EDUCATION, SOCIAL, AND HUMANITIES



Dental Service Time in the Implementation of Indonesia National Health Insurance Based on the Highest Dental Treatments At Primary Care

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ABSTRACT

In the implementation of Indonesia national health insurance (NHI), utilization is determined from the level of participants' visits to health service facilities. Dental visits have a variation in the time of treatment, thus affecting the volume of patients who can be treated in a day. The dentist's treatment time will affect the dentist's utilization in primary care. This study aim is to discover the time depiction of dental services based on the highest treatment at the Primary dental Clinic. This is an observational descriptive study with a cross-sectional study design. The subjects in this study were all dentists who worked at the Firdaus Primary clinic Yogyakarta. The sampling used purposive sampling technique to collect 120 NHI participant and 120 the private patient who has visited the dental clinic. The training was given to 2 surveyors/observers who worked as dental nurses in the Firdaus Primary Clinic Yogyakarta. A kappa test was conducted to determine the level of agreement of 2 observers in assessing. There are 30 highest dental treatment were performed by 3 different dentist at Firdaus primary clinic. The average time of dental treatment procedure for private patients takes a little longer than the dental treatment time for NHI participants. The common treatment is premedication or consultation with an average time of treatment is 8 minutes 30 seconds and 7 minutes 47 seconds and whereas for the filling treatment using composite resin material requires an average time of 36 minutes and 10 minutes 38 seconds. The mean time of the dental treatment performed by a dentist was influenced by the complexity of the case, and dentist competency

Keywords: dental treatment time, utilization, NHI

1. INTRODUCTION

Capitation is a financing concept of national health insurance (NHI), which is a fixed amount of money paid upfront by each participant every month to general practitioners and or dentists who provide health services to the participants[1]. The 7th WHO Global conference in Nairobi noted that integrated approaches are the most cost-effective and realistic way to close the gap in implementing the sound interventions for oral health around the globe[2].

In the beginning, by year 2014 in the implementation of National Health Insurance (NHI), the government would pay the premiums for civil servants and the poor people (who cannot afford to pay the premiums), so the amount of total coverage is 121.6 million. In the years-later, the coverage has followed by employees of state-owned enterprises and private sector. The Indonesian National Health Insurance is expected that in 2019, the entire citizens will be covered by this system. [3]. Premiums for NHI system are the result of the calculation of capitation, with the financing concept to be implemented in a manner of cross-subsidy between healthy participants and the sick in the group of membership. Therefore it needs to identify the influencing factors to determine the amount of capitation[4].

Hopefully, that this financial scheme, can be expected

that primary care dentist will suppress the use of cost or curative procedure (aspect that need largest resources)[5]. With this budget, dentists at primary care should arrange intervention to prevent the dental health problem in their population. Dentists need to manage the budget based on dental problem in their population, and to decrease the curative treatment at dental visit. They should know the condition in their population, probably they should divide the population into high risk and low risk for dental disease[6]

In National Health Insurance for oral health, the general dentists will work at primary level and will perform a good administration and financial management. Good administration means that while providing services for the patient, the dentist as provider must noting report of: number of visits, type of illness, type of dental therapy, and noting the use of money with good cash flow pattern. Needs to be noted that the most important administration rules is the utilization data (utilization review).. This utilization review could be the important data for Indonesian dentist if they will give suggestion to the government to make a revisions about the amount of capitation. This data record is also can be used for a more precise calculation of capitation. The capitation budget pattern requires a conceptual framework adapted to the conditions of each region[7].

The Pratama Firdaus Clinic (PFC) Yogyakarta, which is

located in an urban area in the city of Yogyakarta, is a primary clinic with general services and dental services as one of the NHI providers since 2015. The PFC not only serves NHI patients but also serves general dental patients or non-NHI with the same type of equipment and materials. The highest treatments performed by dentists at PFC were consultation/premedication, Glass Ionomer Cement (SIK) filling, and composite resin filling[8]. The number of dental visits at PFC continues to increase every year. The number of participants and dental patient visits at PFC are in the high category, namely the utilization of more than 2%. This figure is obtained from a total of 2,185 NHI patients divided by the total NHI registered participants multiplied by 100 percent.

Utilization review is determined from the level of participants' visits to health service facilities. Utilization depends on the time of action or service time allocated to the patient. Service time can affect utilization rates because this affects the number of participant visits to the clinic. Service time is the standard time used for dentists in providing services to patients, calculated from the time they enter the registration place until they return home[9]. Dental visits have a variation in the time of treatment, thus affecting the volume of patients who can be treated in a day[10]. Based on this problem The dentist's treatment time will affect the dentist's utilization in primary care, it is necessary to discover how much time is needed for services in the field of dentistry based on the type of service and the most actions at the Firdaus Yogyakarta Primary Clinic?. That's why the aim of this study is to discover the time depiction of dental services based on the highest treatment at the Primary dental Clinic

2. METHOD

This is an observational descriptive study with a cross-sectional study design. The subjects in this study were all dentists who worked at the Firdaus Primary clinic Yogyakarta. The sampling used purposive sampling technique to collect 120 NHI participant and 120 the private patient who has visited the dental clinic. Inclusion criteria were used in this study to select dentists as research subjects, namely dentists who have a fixed schedule practice at least twice a week and dentists who have permanent contracts at PFC. In this study, there are uncontrolled variables that might affect the results of the study, namely

- a) The complexity of the case
- b) The gender of the patient
- c) Age of the patient
- d) Gender of Dentist

The highest dental treatments in PFC are taken from Journal publication from Heningtyas et al, which has been published in the journal Indonesia dental association (JIDA). The highest number of dental treatments in PFC is Premedication / Consultation, Glass Ionomer Cement filling, Composite Resin filling, and permanent tooth extraction, deciduous tooth extraction, and tooth scaling[8].

This research requires assistance from dental nurses at PFC who are on duty every day to assist in recording the time for treatment performed by dentists. The training was given to 2 surveyors/observers who worked as dental nurses

in the Firdaus Primary Clinic Yogyakarta. A kappa test was conducted to determine the level of agreement of 2 observers in assessing. The researcher as the golden standard or determinant of the research time and the two dental nurses at the Pratama Firdaus Clinic calculated the length of time for the action simultaneously to seven patients who came on the first day of the study. The results of the perception equation test conducted to find a common understanding of the two surveyors. The calculations were carried out on the same 7 patients at the same time. The results of the test were obtained from 6 samples of the calculation of the time the patient and researcher visited them as the golden standard of the study. The six samples were divided by a total of 7 samples during the patient's visit on the same day then multiplied by 100%. The result of the perception equation test for the two dental nurses was 85.71%.

The data analysis used in this research is descriptive analysis with the mean and frequency approach. The data analysis in this study aims to provide an overview of the calculation of dentist service time at NHI at PFC. This research has been proposed to be declared ethical by the Health Research Ethics Committee of the Faculty of Medicine and Health Sciences, Muhammadiyah University of Yogyakarta.

3. RESULT

The total number of 240 research samples planned in this study, in the end, there were only 30 research samples. This is due to the policy given by the PFC management in the presence of the Sar-Cov 2 (Covid-19) pandemic. This situation makes several actions such as extracting adult teeth, extracting deciduous teeth, filling teeth using glass ionomer cement, filling teeth using composite resin, and tooth scaling must be temporarily eliminated until an undetermined time. The decision of the PFC management is under the circular letter from the IDA and WHO regarding the guidelines for dental services during the third point of the Covid-19 virus pandemic, namely delaying action without symptomatic complaints, being elective, aesthetic treatment, action using bur/scaling/suction.

It could be described at Table 1. The average time, diagnose and dental treatments result. There are 30 highest dental treatment were performed by 3 different dentist at Firdaus primary clinic. The average time of dental treatment procedure for private patients takes a little longer than the dental treatment time for NHI participants. The average time required for dentists to treat NHI patients is 18 minutes 5 seconds. Meanwhile, the average dental treatment time for general patients (non-NHI) was 17 minutes 13 seconds. The average length of dental treatment for NHI patients was recorded at 37 minutes 15 seconds and the average of the fastest dental treatment measures was 4 minutes 55 seconds. Meanwhile, the average length of dental treatment for general patients (non-NHI) was 17 minutes 13 seconds and the average of the fastest dental treatment measures was 3 minutes 39 seconds.

The common treatment is premedication or consultation with an average time of treatment is 8 minutes 30 seconds and 7 minutes 47 seconds and whereas for the filling treatment using composite resin material requires an average time of 36 minutes and 10 minutes 38 seconds.

The results of this study found that the average time required for dentists to treat NHI patients was 11 minutes 21 seconds. The mean time of action for general patients (non-NHI) was 17 minutes 13 seconds. The differences in the meantime of the action were performed by the three dentist respondents at different times, diagnoses, and actions. The difference in the length of time for this procedure can be caused by the skill or ability of the dentist and the complexity of the cases encountered

4. DISCUSSION

The utilization rate of NHI patients in PFC is higher than general patients (non-NHI), this is probably because PFC is the first level health facility that has collaborated with NHI. General patients and NHI patients who visit PFC have a different case diagnosis and difficulty level. Dentists at PFC provide action according to the diagnosis found. Factors that influence the length of treatment in general treatment are complications or infection of the surgical wound, type of surgery, type of case or disease, and the doctor who handles it. In dentistry, the factors that influence the length of time to act can be caused by the level of knowledge and

competence of the dentist. In addition, the dentist service time is influenced by the number of patient visits, workload, and types of actions performed, and the level of difficulty of cases encountered[11].

Most dental procedures performed at the Firdaus Primary Clinic in 2017 were premedication/consultation, totalling 1,125 procedures. The high rate of premedication/consultation can be caused because it includes medication and/or referral action. Dentists perform premedication or consultation as a treatment option for patients who need a referral to higher health facilities.

The results of this dentist's treatment time study also showed that premedication or consultation was considered high, namely 18 procedures. This can be caused by the complexity of the cases that have arisen due to the policies of the PFC management in relation to the Covid-19 pandemic. The policy given by the PFC management makes dentists only allowed to carry out treatments such as premedication/consultation and simple actions such as extracting teeth with simple cases and so on.

The complexity of cases faced by dentists in providing services according to the benefits package causes cases that should have been handled in primary care to become referral cases. Case complexity has a different definition for each health workers.

Tabel 1. Average dental treatment time by dentists for NHI patient and general patients (non-NHI) based on case diagnosis

No	Diagnose	Dental Treatment	Time
1.	<i>Caries of dentin</i> : teeth 74	Filling with glass ionomer cement (Class 1 Black)	14 minute 33 second
2.	<i>Caries of dentin</i> : teeth 11	Filling with composite resin (class 3 Black)	14 minute 05 second
3.	<i>Necrose of pulp</i> : teeth 74	Premedication/consultation	7 minute 09 second
4.	<i>Disturbances in tooth eruption</i> (radix 24)	Premedication/consultation	6 minute 06 second
5.	<i>Disturbances in tooth eruption</i> (luxation 74)	Extraction of decidui teeth	4 minute 26 second
6.	<i>Disturbances in tooth eruption</i> (luxation 34)	Extraction of decidui teeth	15 minute 29 second
7.	<i>Impacted tooth</i> teeth 38	Premedication/consultation	4 minute 55 second
8.	<i>Disturbances in tooth eruption</i> (luxation 34)	Premedication/consultation	4 minute 20 second
9.	<i>Necrosis of pulp</i> teeth 46	Premedication/consultation	3 minute 07 second
10.	<i>Caries of dentin</i> teeth 54	Filling with glass ionomer cement (Class 1 Black)	8 minute 39 second
11.	<i>Necrosis of pulp</i> teeth 48	Premedication/consultation	10 minute 24 second
12.	<i>Necrosis of pulp</i> teeth 37	Extraction of permanent teeth	17 minute 05 second
13.	<i>Pulpitis gigi</i> 18	Deitalization of the pulp	20 minute 39 second
14.	<i>Other unspecified diseases</i>	consultation and MMR measurement	42 minute 31 second
15.	<i>Other unspecified diseases</i>	Premedication/consultation	9 minute 53 second
16.	<i>Caries of dentin gigi</i> 15	Filling with glass ionomer cement (Class 2 Black)	25 minute 58 second
17.	<i>Disturbances in tooth eruption</i> (persisten 81)	Extraction of decidui teeth	6 minute 38 second
18.	<i>Other unspecified diseases</i>	Premedication/consultation	3 minute 59 second
19.	<i>Caries of dentin</i> teeth 17	Filling with composite resin	5 minute 51 second
20.	<i>Necrosis of pulp</i> teeth 16	Premedication/consultation	1 minute 13 second
21.	<i>Necrosis of pulp</i> teeth 46	Premedication/consultation	11 minute 42 second
22.	<i>Pulpitis</i> teeth 83 dan 84	Premedication/consultation	17 minute 01 second
23.	<i>Dental examination</i>	Premedication/consultation	6 minute 38 second
24.	<i>Chronic periodontitis</i>	Premedication/consultation	11 minute 43 second
25.	<i>Caries of dentin</i> teeth 16	Premedication/consultation	8 minute
26.	<i>Necrosis of pulp</i> teeth 14	Premedication/consultation	4 minute 35 second
27.	<i>Necrosis of pulp</i> teeth 16	Premedication/consultation	4 minute 35 second
28.	<i>Disturbances in tooth eruption</i> (radix 36)	Premedication/consultation	3 minute 39 second
29.	<i>Caries of dentin</i> teeth 12	Filling with composite resin (class 5 Black)	36 minute
30.	<i>Disturbances in tooth eruption</i> (persisten 74)	Premedication/consultation	12 minute
average dental treatment time by dentists for NHI patient		: 18 minute 5 second	
average dental treatment time by dentists for non NHI patient		: 17 minute 13 second	

This can be due to the different abilities and experiences of dentists in handling complex cases. The dentist performs several actions such as filling using various grades of composite resin and filling the teeth using glass ionomer cement of various grades which have a low case complexity level. These measures fit into the benefits package offered to NHI participants. All these actions are performed directly in one patient visit.

The capitation revenue is strongly influenced by the utilization of dental care and the type of benefit package that is offered by the health insurance. This interaction is affected not only by the relationship between the participant and the provider but also by social and cultural factors and the organization of the interaction. The result of the interaction is the existence of a common understanding between participants and providers about dental health needs, which is important because, in general, the interaction is only a desire and is not regarded as a necessity. The utilization rate is a percentage that describes the occurrence of visits to the dentist by the participants for a particular type of dental care treatment at the visit, as a monthly average[12]. Utilization is influenced by the length of time the dentist works, while the length of time that the dentist works is influenced by the ability of the dentist to perform medical actions. The quality of medical services mainly depends on technical knowledge and skills which are the most important factors affecting the quality of work and service time of dentists[13]. The length of work can describe a person's experience in mastering their field of work. In general, officers with high work experience do not need guidance compared to officers with little work experience. The primary dentist at PFC works with a part-timer system, which is working with a division of time or working days which is used as a service strategy for participants by providing variations in the choice of dentists and as a means of refreshment or refreshment to dentists as health service providers.

The conclusion of this study found that the mean time of the dental treatment performed by a dentist was influenced by the complexity of the case, and dentist competency.

AUTHORS' CONTRIBUTIONS

This research study could be the guided for other research study, especially in the implementation of Indonesia National Health Insurance. It can be suggested that dental service time should be in arrow with utilization rate, and it will need toward research in the future.

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