Media Kesehatan Masyarakat Indonesia
Volume 16 Issue 3 2020
DOI : 10.30597/mkmi.v16i3.9864
Website : http://journal.unhas.ac.id/index.php/mkmi

A Case Study: Negative Effects of Unscheduled Appointment System to Physiotherapists and Paediatric Patients

Sebuah Studi Kasus: Efek Negatif Sistem Appointment Tidak Terjadwal pada Fisioterapis dan Pasien Anak

Triana Karnadipa
Physiotherapy Department, Vocational Education Program of University of Indonesia
Email korespondensi : trianakarnadipa@gmail.com

ARTICLE INFO

Article History:
Received Jun, 9th, 2020
Revised form Jun, 21st, 2020
Accepted Sept, 18th, 2020
Published online Sept, 30th, 2020

Keywords:
Appointment;
unscheduled;
CBR;
children;
disability;

Kata Kunci:
Janji pertemuan;
tidak terjadwal;
RBK;
anak;
disabilitas;

ABSTRACT
Community-Based Rehabilitation (CBR) units are growing in developing countries, including Indonesia. However, patient safety measures in CBR units have not yet been conducted, especially regarding to flexible, unscheduled appointment system. This study aims to evaluate unscheduled appointment system as a cause of errors in care delivery of a CBR unit for children with disabilities in Makassar city. This case study conducted a 278-hours observation and three structured interviews. The observation findings, encoded interview findings, field notes, and self-reflective notes were triangulated and link thematically. Four key findings were illustrated in an explorative model. The CBR unit implements a day-based scheduling system without time slots. Working in this system, the therapists experienced random visits, long waiting times, and excessive workload as results from this flexible scheduling system. Significant risks of human errors and patient safety were revealed due to these consequences. As flexible scheduling systems produces more negative effects to the therapists and children, it is suggested that a CBR unit or a health care unit to implement scheduled appointment system with timeslots to achieve prudent healthcare.

ABSTRAK
Unit Rehabilitasi Berbasis Komunitas (RBK) sedang bertumbuh di negara-negara berkembang, termasuk Indonesia. Akan tetapi, pengukuran keselamatan pasien di unit RBK belum pernah dilakukan, khususnya mengenai sistem appointment fleksibel dan tidak terjadwal. Studi ini bertujuan untuk mengevaluasi sistem appointment yang tidak terjadwal sebagai penyebab kesalahan pada pelayanan kesehatan di sebuah unit RBK untuk anak-anak dengan disabilitas di kota Makassar. Studi kasus ini melakukan observasi selama 278 jam dan tiga interview terstuktur. Temuan observasi, temuan interview yang di-coding, catatan lapangan, dan catatan refleksi diri ditriagulasikan dan dihubungkan secara tematik. Empat temuan utama diilustrasikan dalam model eksploratif. Unit RBK ini menerapkan sistem jadwal berbasis hari tanpa pemetaan waktu. Bekerja dalam sistem ini, fisioterapis mengalami kunjungan pasien acak, waktu menunggu yang panjang, dan beban kerja yang berlebihan sebagai akibat dari sistem jadwal fleksibel. Risiko kesalahan manusia dan keselamatan pasien yang signifikan ditemukan sebagai akibat dari konsekuensi tersebut. Karena sistem jadwal yang fleksibel lebih memberikan efek negatif pada fisioterapis dan pasien anak, maka disarankan unit RBK ataupun unit pelayanan kesehatan menggunakan sistem appointment terjadwal dengan pemetaan waktu untuk mencapai pelayanan kesehatan yang bijaksana.

INTRODUCTION

Current global statistics inform that approximately 650 million people in the world or around 10% of the world population, live with a disability.[1] Particularly, 80% of them live in developing countries, including Indonesia. Based on the latest national report of people with disabilities,[2] the prevalence of children with disabilities in Indonesia was 1.03% which was about 67,109 people. Among the types of disabilities, physical disabilities had the highest prevalence which was 34%.[3] However, there is limited information about the prevalence of children with disabilities in Makassar as the latest report only includes people who are older than 15 years old.[4]

The current national health programs for children with disability exclusively aims to strengthen health clinics in selective schools and health guidance for families of the children.[2] This situation means a physical rehabilitation program has not yet established by the Indonesian health ministry. Therefore, low-income families of a person with a disability have to seek support from a Community-Based Rehabilitation (CBR) unit managed by an NGO body.

Currently, more than 90 countries throughout the world have implemented and continued to strengthen their CBR programs, aiming to outreach poor and marginalized people with disabilities, including Indonesia.[5] The Indonesian Society for the Care of Disabled Children (YPAC) is the first CBR program in Indonesia and now, 16 institutions of YPAC located throughout Indonesia, including Makassar City.[3] YPAC has become the main support for families of children with disabilities.

Our study took place in a CBR unit for children with disabilities in Makassar City, YPAC Makassar. This unit implements an unscheduled, flexible appointment system. This system is in contrast with prudent healthcare, which is the concept of future healthcare service.[6] This concept aims to achieve healthcare that meets the needs and circumstances of patients and actively minimize wasteful care that does not benefit the patients. However, in their report, concerns about the length of waiting times, not seeing the same clinician on each appointment, and poor communication on available health options are the most common.[6] These problems were considered to have a significant impact on public health.[7] It is because they could undermine the patient's care and its results, as well as the service revenue.[8] Therefore, an adequate appointment system is needed in order to achieve prudent healthcare.

This present paper explores the possible consequences of a CBR practice with unscheduled appointments through the physiotherapists' perspective. The implications are discussed, and practical recommendations are made. The study may inform the CBR unit and other healthcare services about the consequences of an unscheduled appointment system.

MATERIAL AND METHOD

This study used a qualitative case study design. Purposive sampling was used in this study. We invited three physiotherapists who have at least one year of working experience at

YPAC Makassar. This study was carried over between May to October 2019. We observed the rehabilitation unit of YPAC Makassar for in-depth exploration and analyzed contributing risk factors to patient safety for 278 hours in the first three months.[9] The observation was recorded into videos, and notes were made. The observation findings were analyzed in a structured approach using a fishbone chart, and the identified factors were categorized to ensure the risks are systematically defined.[10]

The semi-structured interviews were conducted between May and October 2019. Interviewees voluntarily participated and gave their written informed consent. Their identities were anonymized for confidentiality. The interview was conducted in Bahasa Indonesia and audiotaped. After the interview, we took field notes to record their facial expression and behaviors during the interview. The interview was recorded, transcribed verbatim, and analyzed inductively.[11] The transcriptions were reviewed and coded through a series of open coding, axial coding, and selective coding. In open coding, all information was read line-by-line and coded according to their data category. In axial coding, the codes and subcategories regarding the lack of a standard operating procedure were organized, compared, and analyzed thematically. We made an explorative model after identifying the relationships from the data. Then, the transcripts were translated into English and cross-checked with an English translator for comprehension and consistent translation. Lastly, in selective coding, the final preposition was formed from rationalized the findings from both observation and interview. In order to minimize our assumptions and biases, self-reflective notes were analyzed. Also, we sent our findings to the participants for their feedback.

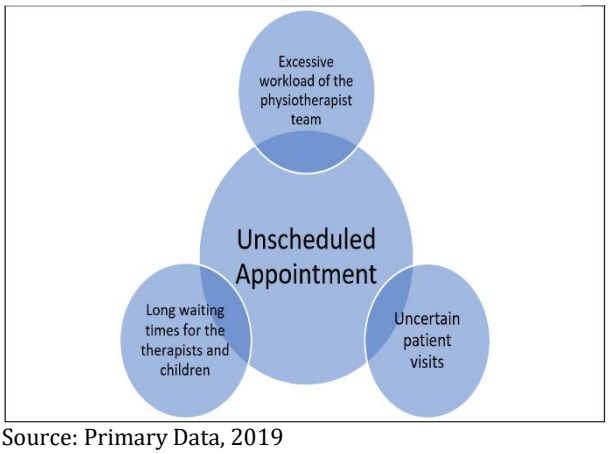
RESULTS

The rehabilitation unit encompasses the South Sulawesi Province, Indonesia. The unit operates for four hours (9:00 to 12:00) from Monday to Saturday, in a medium-size (16x24 m) room. The types of physiotherapy equipment and tools in the unit were adequate for rehabilitation means, despite being more than seven years old. However, in terms of numbers, they are not enough to compensate for a large group of children. The unit was operated by three physiotherapists. In addition, internship students from two physiotherapy schools also took shifts to assist them for 1 to 3 months. The expertise of the therapists ranged from their second year in the profession to more than ten years of expertise in pediatric rehabilitation. The students were in the first year of their internships. The unit has an unscheduled, flexible appointment system. Additionally, this unit was also receiving on-going self-referral requests not only from the South Sulawesi but also from other provinces in eastern Indonesia. Most of the cases included children and young people with developmental delays or disabilities.

The demographics of the participants were all females and only one of them had married. On average, they were aged 27 years old (range 25 to 29), licensed physiotherapists, and

have 2 years of working experience at YPAC Makassar. Based on our findings, we generated an explorative model of consequences due to the unscheduled appointment experienced by the physiotherapists (Figure 1). The three consequences of the unscheduled appointment were identified as follows uncertain patient visits, long waiting times for therapists and children, and excessive workload for the physiotherapist team.

In this CBR unit, the manager distributed the patients based on their visit days but not on a time-based schedule. This unscheduled appointment system, therefore, leads to an uncertain, random patient visits. Based on our observation, because of this, they were waiting for the patients until the work hour ends even though there were no visits. Additionally, there were patients who visited the CBR unit after the working hours ends. Even so, the therapists still treated the patients. A therapist described this problem as a burden to their job.



Source: Primary Data, 2019

Figure 1. The Explorative Model of Consequences due to the Unscheduled Appointment

Physiotherapist B said, "Yes, this clinic (emphasize) does not have any scheduled appointment. So, we cannot be sure if they (patients) would visit or not. And…. The system in this clinic doesn't arrange the patient's visits even… I feel that… it is really a burden to the physiotherapists." – U7

Random visits also lead to unequal daily workload distribution. This workload was addressed as a prominent problem among the physiotherapists. According to their subjective experiences, the patient visits were crowded on certain days and they were quiet for the rest of the week. Because of this, the therapists spent their working time for waiting in the quiet days, while overworked themselves in the busy days. Based on our observation, on the quiet days, there were only two to three visits in the working hours. On the other hand, approximately seven to eight patients were visiting around the same hour on the full days.

Physiotherapist A said, "Sometimes, there is one day when only a few patients are visiting and then on one day, there are too many patients visiting….. in numbers that are beyond our capacity (there are only three physiotherapists)." – U1

Physiotherapist C said, "In my opinion, it is not good…. Because sometimes there are a lot of patients crowded at a certain time." – U15

To conclude, this uncertain, random visit caused unfair daily workload distribution. Unscheduled appointments were experienced as a burden and uncertainty for the therapists. This unclear schedule leads to variation in the therapist's daily workload which would contribute to the risk of human errors in the care delivery.

Unscheduled appointments cause long waiting times for both therapists and children with disabilities in the CBR service. Due to lack of schedule, the therapist kept waiting through

the working hours, expecting the patients and their families even they were late, came after the working hours, or did not show up. Based on our observation, there were times when only a patient showed up during the working hour. In addition, there were days when a patient showed up 30 minutes before the service ended. There is no punishment for late visits to this clinic. This condition leads to a lack of families' adherence and discipline to the working hours.

> *Physiotherapist B said, "We come at 08.00 A.M, and sometimes the patient's visit at 10.00 A.M. Even there were some of the patients visiting at 11.30 (30 minutes before the working hours ends)." – U9*

> *Physiotherapist A said, "They (the patients) are lack of discipline to working hours (there is no written schedule). The consequence of late visits is weak……. It feels so exhausting when we have to treat a lot of patients while sometimes, we are too relaxed in a day." – U3*

> *Physiotherapist C, said, "Sometimes we are sleepy (while waiting) when there is no patient." – U18*

Long waiting times affect not only the therapist but also the children. Children with disabilities, like typical children, would fell asleep, have mood swings, and throw a tantrum when they are bored waiting. According to our observation, when they threw a tantrum, the therapist faced significant challenges in providing therapy. The children will be less likely to follow the therapists' instructions while they are throwing a tantrum or sleepy.

> *Physiotherapist C said "Children tend to change mood quickly and…. Sometimes they will throw a tantrum if they wait too long. (After they threw a tantrum) we cannot give optimal treatment while they are crying…" – U16*

> *"There were children who fell asleep while waiting for a long time or cried because they were bored." – U19*

The unit has limited numbers of tools. This unit only have one stall bar for postural exercise, four electrical stimulation devices, one three-meters parallel bars, and eight pairs of splints and ankle-foot orthotics (AFOs) in different sizes. Based on our observation, on a crowded day (there were 6-8 children treated at the same time), the children have to queue about 15-30 minutes before they could use one type of equipment, especially for the stall bar, splints, and AFOs. Because some children have the same sizes or treatments, they have to take turns to use the equipment. This queue caused a delay in receiving treatments. Based on our observation, there were times when a child could not receive a full course of treatment because his/her guardian had come to pick his/her up.

> *Physiotherapist B said, "Also……. this condition creates ineffectiveness in the physiotherapy intervention because the numbers of electrotherapy modalities and therapy equipment like AFOs, standing (stall) bar, and so on are very limited." – U13*

> *"So……. when they come at the same time……. they have to queue before they are given a certain intervention, such as standing bar and parallel bar……. Because we only have one of each……" – U14*

Altogether, the long waiting times cause physical and mental exertion for both therapists and children. Temper tantrum and sleepiness after the long wait decrease the children's attention to the therapist's instruction. Thus, benefits of the therapy would not be achieved effectively. Additionally, limited numbers of therapy equipment and therapist meeting a big group of children at the same time created a delay in receiving treatments thus risks of patient safety may arise.

Unscheduled appointment leads to random visits. In this CBR unit, the workload pattern consists of quiet days following with busy days when 6-8 children show up around the same time. Only three physiotherapists are working at this CBR unit, while, ideally, one child with a disability needs at least two therapists in one session. Thus, on the busy days, the unit environment was chaotic and overwhelmed because three therapists had to cope up with 6-8 children with disabilities at the same time. This excessive workload causes the therapy flow to be disorganized, thus leading to inappropriate variation in the given treatments.

Physiotherapist A said, "Sometimes…. it feels so confusing….. It is confusing to choose what we should be focused on primarily. Sometimes we forgot what we have given to the patient." – U4

Physiotherapist B said, "Sometimes five patients visit at the same time, while there are only two or three physiotherapists available…. Sometimes to treat one child…. we need two physiotherapists…." – U11

The physiotherapists also expressed that they are prone to make errors due to distraction in an overwhelming situation. Because of this, they are aware that they do not give their best, most effective treatment due to the excessive workload. They also wished that they could be more organized in scheduling and did not overwork themselves.

Physiotherapist A said, "For instance….. we have trained the patient to stand in the previous session… because of the overcapacity (too many patients at the moment), we lost our concentration, and we just sometimes forgot…." – U5

Physiotherapist B said, "It makes the staff overwhelmed with the massive numbers of patients…. As a consequence…. the therapy process is not efficient and effective….." – U10

Physiotherapists C said, "I also think it would be good if we organize the schedule for each child…… so we would not overwork ourselves….. we can also give optimal treatments…. the children don't have to wait for too long before receiving their treatment too….." – U17

Surprisingly, the therapists revealed that internship students significantly relieved some of their workloads. The students were assigned to this CBR unit for 1 to 3 months by two physiotherapy schools based in Makassar city. In this unit, they assisted the therapists in putting the equipment on the children and they treated the children under the therapists' supervision after several informal tutorials.

Physiotherapist A said, "There are three physios on a daily basis, 5 to 7 patients come at the same time….. Our burden is relieved when the internships students were here….." – U6

Overall, the physiotherapists are aware of the disorganized flow of treatment and the ineffectiveness of the treatment process. The workload only relieved when they have students served as their assistants. Additionally, distinct variations were observed through the treatment process. This variation may be caused by the overwhelming workload that disturbed the therapists' concentration. Thus, higher risks of human errors may arise.

DISCUSSION

This case study revealed that there are three consequences experienced by the therapist working in an unscheduled appointment system. Even though the CBR unit applied a simple day-based scheduled, they did not organize the appointment using a time slot. Based on our findings, this day-based schedule resulted in

random visits. These were described as an excessive burden by the therapists. Our findings were supported by an evaluation of the flexible scheduling model by LaGanga & Lawrence, they found that the model tends to create uncertainty as to whether the patient would show up or not.[9] Furthermore, unscheduled care could establish a pattern of delay among the health providers due to the random variation of patient arrivals and delays in initiating their intervention.[13] Moreover, the therapist prominently expressed that random visits resulted in unfair daily workload distribution with concurrent quiet and busy days. Particularly, on quiet days, they experienced frequent late visits and no shows. Our findings were comparable to the findings of LaGanga & Lawrence. Their results revealed that patients who do not show for their scheduled appointment are a significant and persisting problem for healthcare clinics.[12] As a consequence of no-shows, health providers have lost their effective capacity and wasted a great sum of healthcare costs and resources.

Surprisingly, some scheduling system designers proposed a flexible appointment system where patients randomly arrive at their own volition for immediate service to solve the problem of no-shows in scheduled appointments.[12] However, the service delivery would become more unscheduled and over-booking of the appointment schedule may happen. This problem also arose in the CBR unit when they are overbooked in the busy days. Additionally, the model has a high probability of some patients remaining unserved at the end of a service day-session.[12] These findings were similar to ours. Based on our observation, a long queue caused a delay in receiving treatments. Particularly, we found multiple events when a child could not receive a full course of treatment because his/her guardian had come to take him/her home.

Long waiting times were also experienced not only by the therapist but also by the children. This problem was revealed as strenuous exertion and a significant challenge in providing therapy for the children. A study of appointment scheduling systems in healthcare by Gupta & Denton revealed that a system without an appointment tends to result in patients experiencing long waiting times before they receive their actual service from health providers.[11] Moreover, Murray & Berwick found that serious safety concerns and inconveniences would arise when the patients experience delays in receiving care and excessive waiting times, especially for patients who need urgent care.[15] A study by Corsano, Majorano, Vignola, Guidotti, & Izzi revealed that most of the young patients (aged 7-15 years old) experienced boredom during long waiting times.[16] Particularly, their drawings expressed anxiety and negative emotions which they experienced during waiting times. In our findings, when the children could not tolerate boredom during waiting times, they started throwing a tantrum. Tantrum has been revealed by the therapist as a significant challenge in instruction-giving, leading to ineffective therapy.

The increase in waiting times and delays could also occur when the demand for health services exceeding the staff's capacity to provide

service.[13,17] The excessive demand could increase the number of uncompleted tasks by previous shifts, increase the length of time to complete the tasks, and raise concerns about the quality of care, creating workplace stress and work overload in the clinic.[18] Likewise, our findings revealed that the therapist experienced excessive workload on busy days when they have to treat more than six children at the same time. These numbers were described as 'over our capacity' by the therapists. This problem arose due to demand management would raise a question on the way of the organization managing the demand for health services. Kosnik and Christian & Tran emphasize that these workload issues would compromise the health providers' capabilities to make decisions and solve problems leading to work around with less emphasis on safety. [15,17,19] This corroborates with our findings in which the therapists tend to forget steps in the therapy process due to confusion in a chaotic situation. Additionally, Vincent contends that the decision taken by the higher echelons of an organization may result in latent failures whose consequences lie dormant for a long time yet are difficult to foresee and become evident after the combination of local triggers breaching the system.[18]

Our findings revealed that this CBR unit does not have information and documentation systems. Our evaluation described this as a contributing factor to the errors since it has been revealed that a lack of materials or information could lead to longer average service time.[13] Without adequate information, service providers could not appropriately estimate the service time and manage the expected patients' waiting time. The urgency, patient preferences, and cancellations of the appointment are valuable pieces of information to make decisions in advance about demand allocation and designing an appointment system.[14] This information would enable providers to anticipate delays in providing care.[12] LaGanga and Lawrence argued that this information tends to be missed in the service delivery resulting in late cancellations and no-shows. It could lead to poor resource utilization, insufficient revenue, and longer waiting times.[12]

As the negative effects of unscheduled appointment found in this study, it is recommended that the rehabilitation unit develop and apply a documentation system. Information from documentation could be used to conduct an audit of the rehabilitation service. Based on data and feedback from the audit, an appointment-scheduling board or system should be developed based on the estimation of intervention time, therapist's workforce, and waiting times. The scheduled appointment is in line with the prudent healthcare which aims to provide timeless and appropriate experience to the patient, especially regarding the waiting times.[6]

CONCLUSION AND RECOMMENDATION

This study evaluated the unscheduled appointment system as a cause of errors in care delivery in a CBR unit for children with disabilities in Makassar City. Three consequences of an un-

scheduled appointment system have been identified. The therapists of the CBR unit prominently experienced random visits, long waiting times, and excessive workload. These consequences have been revealed to confuse the therapy process, physical and psychological exertion for both therapists and children, and ineffective therapy process. Although the current study is based on a small number of participants, the findings of this study suggest that the CBR unit or a health care unit with a flexible appointment system to implement a scheduled appointment system with time slots to prevent risks of human errors and patient safety. These findings contribute in several ways to a deeper insight into the importance of scheduled appointment system to achieve prudent healthcare in Indonesia. A further study in larger CBR units or healthcare units with a flexible appointment system in Indonesia is suggested to explore its consequences in a larger, more complex healthcare service.

ACKNOWLEDGMENTS

The authors would like to thank the managers of Foundation for Development of Disabled Children (YPAC) Makassar who provided permits and information and the physiotherapists who participated in the study.

REFERENCES

1. Disabled World. Disability Statistics: Information, Charts, Graphs and Tables. [Report]. Disabled World; 2020.
2. Kemenkes RI. Buletin Jendela Data & Informasi Kesehatan: Situasi Penyandang Disabilitas.. Jakarta: Pusat Data dan Informasi Kementerian Kesehatan RI; 2014.
3. COMCEC. The Role of Community-Based Rehabilitation in Poverty Reduction : A Comparative Study among Iran, Malaysia, and Indonesia. Ankara-Turkey: COMCEC Coordination Office; 2016.
4. Dinkes Kota Makassar. Profil Kesehatan Provinsi Sulawesi Selatan Tahun 2016. Makassar: Dinas Kesehatan Kota Makassar; 2017.
5. WHO. Health Component CBR Guidelines. Geneva: World Health Organization; 2010.
6. Bradley P, Wilson A, BuBradley P, Wilson A, Buss P, Harrhy S, et al. Achieving Prudent Healthcare in NHS Wales. *Public Health Wales*. 2014:1–52.
7. Ellis DA, McQueenie R, McConnachie A, Wilson P, Williamson AE. Demographic and Practice Factors Predicting Repeated Non-Attendance in Primary Care: A National Retrospective Cohort Analysis. *Lancet Public Health*. 2017;2(12):551–559.
8. Cashman SB, Savageau JA, Lemay CA, Ferguson W. Patient Health Status and Appointment Keeping in an Urban Community Health Center. *Journal of Health Care for the Poor and Underserved*. 2004;15(3):474–488.
9. Yin RK. Case Study Research : Design And Methods. [Fourth Edition]. California: SAGE Publications; 2014.
10. Cleland G, Habli I, Medhurst J. Evidence: Using Safety Cases in Industry and Healthcare. London: Health Foundation; 2012.
11. Streubert HJ, Carpenter DR. Qualitative Research in Nursing: Advancing the Humanistic Imperative. [Fifth Edition). Philadelphia: Wolters Kluwer Health; 2011.
12. LaGanga LR, Lawrence SR. Appointment Overbooking in Health Care Clinics to Improve Patient Service and Clinic Performance. *Production and Operations Management*. 2012;21(5):874–888.
13. Noon CE, Hankins CT, Côté MJ, Lieb M. Understanding the Impact of Variation in the Delivery of Healthcare Services. *Journal of Healthcare Management*. 2003;48(2):82–97.
14. Gupta D, Denton B. Appointment Scheduling

in Health Care: Challenges and Opportunities. *Journal IIE Transactions*. 2008;40(9):800–819.

15. Murray M, Berwick DM. Advanced Access: Reducing Waiting and Delays in Primary Care. *Journal of the American Medical Association*. 2003;289(8):1035–1040.
16. Corsano P, Majorano M, Vignola V, Guidotti L, Izzi G. The Waiting Room as a Relational Space: Young Patients and Their Families' Experience in a Day Hospital. *Child: Care, Health and Development*. 2015;41(6):1066–1073.
17. Temple M, Monaghan S, Watkins J, Atenstaedt R. What Drives Demand for Unscheduled Care Services in Wales?. *Public Health Wales*. 2015;1(1):1–33.
18. Kosnik L. Breakthrough demand-capacity management strategies to improve hospital flow, safety, and satisfaction. *International Series in Operations Research & Management Science*. 2006;91:101–122.
19. Addis S, Holland-Hart D, Edwards A, Neal RD, Wood F. Implementing Prudent Healthcare in the NHS in Wales; What are the Barriers and Enablers for Clinicians?. *Journal of Evaluation in Clinical Practice*. 2019;25(1):104–110.
20. Cristian A, Tran A, Patel K. Patient Safety in Cancer Rehabilitation. *Physical Medicine and Rehabilitation Clinics of North America*. 2012;23(2):441–456.
21. Vincent C. Is Health Care Getting Safer?. *BMJ*. 2008;337(11):1205–1207.