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Preliminary Assessments of Washrooms Conditions in Malaysia Hospital Buildings

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Abstract

Healthcare building conditions require efficient services delivery to afford the users and others stakeholders in the hospital buildings for a serene and safe environment that accelerates wellbeing. The objective of this study is to evaluate the washrooms conditions of hospital buildings, to achieve this goal, hospital buildings must adopt good approaches and services that will enhanced washrooms conditions in the hospital buildings. Apart from ensuring the safety of the environment, users of the buildings must be satisfied with the quality of available services, particularly, those offered to patients. Survey questionnaires were administered to users of hospital buildings in Malaysia. The most significant washrooms conditions reported concerned are hand driers, water closet, water taps, doors lock, plumbing (pipes) signage, wash basins, floors condition, floors (floor tiles / floor finishes), walls (finishes / painting), columns (finishes / painting), ventilators, doors, lighting bulbs, workable alarm bells and lamps ceilings. The washrooms conditions were slightly affected by defects that depreciate the appearance, functionality and utility of hospital buildings thereby lessening their performance and efficiency. Malaysia washrooms conditions are slightly good but require improvement. Therefore, this study asserts the pertinence evaluating of the washrooms conditions approaches employed towards the rectification of the washrooms conditions in hospital buildings across Malaysia. The study posits the adoption of systemic proactive maintenance procedures to preempt decay, causalities (falls of theusers as a results of wetness and slippery floors), and reduce cost implications of washrooms conditions. According to the washroom condition assessment, defects, tidiness and cleanliness of washroom areas as well as the quality of the service delivery are the main factors predicting maintenance service delivery efficiency. User attitudes,misuse, abuse, bad maintenance tactics, and weather are all important factors in determining the maintenance management practices of hospital buildings for washrooms conditions. Maintaining good washroom conditions is essential to ensuring service quality, meeting the expectation of users, and reducing the number of avoidable faulty washroom components.

Keywords

Construction Strategies, Poor Materials, Proactive Maintenance, Structural defects, Performance.

9. Introduction

Hospital buildings conditions necessitates the findings of this study, such that washrooms conditions are the major concern, and as these was mar by many factors in which defects is one of them. For instance, physical defects indisputably deface washrooms conditions and degenerate their productivity. This is especially true for hospital buildings as reputes washrooms conditions. Hence, generally hospital building conditions constitutes an urgent issue of global concern. Historically, the subject of building conditions has been a deserted area of technological discourse. However, the recent increase of global attention to the relevance of building conditions has not only brought it to the fore, but has also stimulated intensifying investigations into emerging maintenance management practices. In Malaysia, the state of building conditions has not too much fared any better to be in the trend of global competitiveness (Tan, 2018; FMT Reporter, 2019; Boo Su-Lyn, 2020; Boo Su-Lyn, 2020 & Olanrewaju *et al*. 2018).

Recently however, there has been concerted efforts by the Malaysian government to invest in building conditions, but this is yet to yield valuable results (Au-Yong *et al*. 2019). Hospital buildings are places where the

sick receive treatment and recuperative therapy, thus they ought to always be in an optimal state of aesthetical appeal and functionality. The prevalence of defects in the washroom precipitates the unhealthy conditions or state or ageing process of such a building and drastically decreases its productivity and lifespan. This study reported the preliminary findings of this research on the washrooms conditions of hospital buildings. Hospital buildings differ significantly from other buildings because of their function, size, and density. Healthcare buildings are vital components of any meaningful society, therefore their design, construction, and functionality have a remarkable influence on the users' health and wellbeing (Guenther & Vittori 2008).

Researchers argue that if hospital buildings are to function to the required standards, the maintenance service delivery approach must not be cost and budget-driven, instead, it should be value-driven (Olanrewaju *et al*. 2019; Au-Yong 2018). By doing so, the overall essence of maintenance management scheme will be boosted if the conditions of the building are given proactive maintenance procedures in order to be in a good state at all times. This also implies that users will experience low disturbances, distractions and disruptions thereby increasing the user satisfaction and productivity of the buildings.

2. Literature Review

The term maintenance has multiple meanings depending on the context of usage. Often, it is used in reference to the notion of upkeeping, restoration to a specific purpose, or some kind of improvement of an object. In simple terms, maintenance can be defined as a set of actions performed upon a given object to enhance its efficacy (Lind & Muyindo 2011). For Ahzahar *et al*. (2011), building maintenance can be considered effective when a building is in a good state or building's defects are averted through a precise program of recurrent maintenance systems. The conditions of a building depend on defects activities which was addressed or guide against. There are numerous kinds of defects that can exist in a building. For instance, in recent studies conducted in New Zealand, the most significant defects identified include poor flooring, dysfunctional door fixatures, wrongly fixed door and window handles, uneven painted surfaces, nail pops, poor finishes, building cracks, inefficient toilet plumbing, and faulty concreting (Rotimi *et al*. 2015 & Paton-Cole & Aibinu 2021).

From a management viewpoint, maintenance issues such as incompatible maintenance management, poor building detailing and deficient budgetary designs were the culprits pinpointed in Malaysia that mar building conditions (Rahman & Salim 2013). The proliferation of defects in buildings is linkable to a multitude of causes, these issues have devastating consequences for maintenance management albeit their sources. For example, the cause of building defects has been attributed to foundational issues such as unsuitable design requirement and inappropriate construction for the building conditions. Another research categorizes the three broad root causes of defects as inferior materials, design defects and inefficient workmanship which negate the state of the building (Anderson 1999). This resonates with the findings of other researchers who suggest that the main causes of defects relate to workmanship, materials, and maintenance (Chong & Low 2006).

Similarly, Georgiou (2010) found negligent construction and poor maintenance processes as the two primary origins of defects in his study. More broadly however, building defects are attributable to the lack of proper drainage systems, poor architectural designs, ineffective construction strategies, incompetent workmanship, poor materials, analysis, and faulty installations (Auchterlounie 2009) to mention a few, the washrooms conditions had inappropriate and inefficient toilet plumbing problems (Paton-Cole & Aibinu 2021). However, the findings of (Salleh, et al. 2020) on systematics review of hospital buildings conditions stated that public toilet conditions not too good, and also, (Lauren McShane, 2016) highlighted that public toilet conditions in Malaysia especially washrooms conditions are in a state of dilemma.

In same vain, the findings of (Jesumoroti & Khor, 2021b) on maintenance management determinants appraisals for hospital buildings in Malaysia specified that washrooms conditions required better approach. In addition, some key issues were highlighted by (Lauren McShane, 2016) for the toilet conditions in Malaysia; and stated; (i). You will always leave the toilet with wet feet, (ii) Shoe marks on the toilet bowl, (iii) The smell, (iv) You may have to pay, and (v) You have to have the equilibrium of a kung fu master.

10. Method

This study adopted structured questionnaires to gather primary data for aim of this study. A structured questionnaire is also known as a standardized question. Since it encourages standardization, the structured questionnaire minimizes errors due to diversity of the questions (Sekaran & Bougie 2016, Cohen *et al*. 2017). The data was analyzed using the Statistical Package of Social Science 25 (SPSS), several tests were conducted: standard deviation, validity, mode, T-test and reliability, and a Bartlett test was conducted to make the equipment more accurate. It appears partially that problems exist in the washrooms condition for hospital buildings, as indicated by the one-way t-test. The standard error of the sample mean is an indication of how close the sample mean is to the population mean.

The respondents were hospital buildings users who were demanded to rank parameters according to the washrooms conditions in their hospital buildings. The respondents consisted of health care professionals such as physicians, psychologists, dentists, veterinarians, medical doctors, medical officers, nurses and users of the hospital buildings. The respondents willing agreed to participate in the research and 214 respondents responded. The survey was administered from February, 2021 to December, 2021, and consists of demographic; respondent's information, professional affiliations, academic background, numbers of years working in the hospital, position in the hospital, average age of building and conditions of washrooms.

The structured survey questionnaire composed of five-point scale with the use of a "level of importance" on a five-point scale whereby 1= Very Uncomfortable, 2=Uncomfortable, 3= Slightly Comfortable, 4=Comfortable, and 5=Very Comfortable, and comprises of 19 variables for conditions of washrooms which are; cleanliness of the washrooms, plumbing (pipes) signage, lamps ceilings, floors (floor tiles / floor finishes), walls (finishes / painting), columns (finishes / painting), beams, ventilators, doors, doors locks, windows handles, windows frames, water taps, wash basins, water closet, Floors condition, hand driers, lighting bulbs, workable alarm bells and others. 85% of the questionnaires circulated for the survey were retrieved and valid, 5% were invalid, while 10 % had no response. They were accordingly analyzed by ranking.

11. Results

Due to space constraint, I only presented three tables. Table 1 and 2 showed the academic background and educational level of the users. In (Table 1), Administration 5.6%, Biomedical Science 6.0%, Finance 5.1%, Nurse 32.2%, Science Laboratory 3.7%, Accounting 1.9% and majority which are others has 31.8%, as most of the users did not stated their academic background. In (Table 2), Diploma/STPM 52.3%, Bachelor 29.0%, Master 0.5%, PhD 1.0%, MBBS, MRCP 5.1%, and Others 12.1%. Most of the building users are medical staff, while the remaining non- medical staff and executives have experienced the buildings over the years (working experience). More than 57% of the building users have been the hospitals over a period of years (position in the hospital).

Table 1: Academic Background for User

Academic Background	Frequency
Administration	12
Biomedical Science	13
Economics & accounting	1
Engineering	2
Finance	11
Medicine	26
Nursing	69
Science Laboratory	8
Accounting	4
Others	68
Total	214

Table 2: Education Level for Users

Education Level	Frequency
Diploma/STPM	112
Bachelor	62
Master	1
PhD	2
MBBS, MRCP	11
Others	26
Total	214

The condition of washrooms as shown in the (Table 3) below, the overall sum of the mean is 67.6, and standard deviation is 15.8 Based on the results from the survey, 214 respondents rated the washrooms condition rudiments in the (Table 3). The mean values of each element were shown and the rankings were based on their mean values. To put it another way, the higher the rank, the higher the mean value. The mean (Table 3) ranges from 3.7857 to 3.2143, with the circumstances of the Windows Frames in the roof accounting for the greatest mean value (3.7857) and the conditions of Hand Driers accounting for the lowest mean value (3.2143). The mean and standard deviation for the entire group were 67.6and 15.8, respectively. The standard deviation value gives you an indication of how scores are distributed around the average mean. The lower the standard deviation, the closer the score is to the average. As a result, the average standard deviation of washroom conditions ranging from (0.8601) to (0.7726) is fairly close to the average.

Table 3: The Condition of Washrooms in Hospital Buildings for the Users

Condition	Mean	Std. Deviation	Rank
Hand driers	3.2143	0.7726	1
Water Closet	3.3571	0.8113	2
Water Taps	3.3571	0.8112	3
Doors Locks	3.4286	1.0498	4
Plumbing (Pipes) Signage	3.5000	0.6268	5
Floors condition	3.5000	0.9063	6
Wash Basins	3.5000	0.8238	7
Floors (Floor Tiles / Floor Finishes)	3.5714	0.8207	8
Columns (Finishes / Painting)	3.5714	0.7284	9
Walls (Finishes / Painting)	3.5714	0.7284	10
Doors	3.5714	0.8206	11
Ventilators	3.5714	1.0498	12
Lighting bulbs	3.5714	0.8207	13
Lamps Ceilings	3.6429	0.7178	14
Workable alarm bells	3.6429	1.0425	15
Cleanliness of the washrooms	3.7142	0.6999	16
Windows Handles	3.7143	0.9583	17
Beams	3.7857	0.7726	18
Windows Frames	3.7857	0.8601	19

12. Discussion

(Table 3) depicts above showed the washrooms conditions as recorded for hospital building. The illustrations explain for that; mean±1 standard deviation (SD) is 70%, mean±2 standard deviations are 95% or mean±3 standard deviation is 99%. If the percentage falls within the range of 70%, it shows that the washrooms conditions is slightly comfortable, If the percentage falls within the range of 95%, it shows that washroom conditions is comfortable and If the percentage falls within the range of 99%, it shows that washroom conditions is very comfortable. The cumulative mean score of 67.6 and cumulative standard deviation 15.8. As the results illustrate, the washrooms conditions were slightly affected by defects for the ongoing findings assessments, based on the results of this findings it reveal that the washrooms conditions are slightly comfortable.

Other washrooms conditions detected in the building include cleanliness of the washrooms, windows handle and beams. From the data represented in the (Table 3), it is evident that the washrooms conditions indicated that, is

was slightly comfortable, but this does not mean that it can be improved to avoid being deteriorated to bad state which can constitutes a core factor in the propagation of buildings conditions and subsequent depreciation of the building's components. Building users are often irritated by the absence of relevant maintenance services on the washrooms condition which was occupy. The collective types of building conditions for washroom include: defective floor of washroom, column of washroom, lamb ceilings, roof, floor tiles, floor finishes, beams external areas, windows handle external areas, window frames external areas, staircases, lamps, walls finishes, walls paintings as stated by (Ahzahar et al., 2011) and this obvious in the hospital buildings.

Moreover, mold, fungus, or termite, dry rot, wood rot, or vermin infestation can be as an effect of a building condition which could also deter the building and affect the performance. Ideally, maintenance services should be conducted periodically to ensure the continuous efficacy and productivity of the buildings conditions for all the users. Based on the results, good washroom conditions, proper wards, external areas and both roof and floor needs to be in good states, and are required in the hospital buildings.

Interestingly, the users of the hospital buildings indicated that the workers thought the knowledge that some maintenance staff had acquired on the job was insufficient to handle conditions of washrooms and maintenance works. Also, building management can be hampered by unreliable maintenance cost estimates which may include replaceable components, thus resulting in underfunding, opting for inferior materials, which ultimately leads to maintenance difficulties for this ongoing study. Apparently, defects in hospital buildings have an adverse effect on the conditions of the buildings especially washrooms, as it could lead to accident or disasters and procure higher cost of maintenance in the long run. This study recommends that the prevalence of defects such as defective floors (floor tiles / floor finishes), walls (finishes / painting), columns (finishes / painting), ventilators, doors, lighting bulbs, workable alarm bells and Lamps Ceilings amongst others must be guarded against in washrooms and buildings conditions (Salleh, et al. 2020).

The deferment of maintenance activities must be eschewed as this only exacerbates the conditions components of the buildings (washrooms conditions), which will continue to degenerate in functionality until the building endangers its users and residents or becomes uninhabitable (Tan, 2018). Thus, this finding reemphasizes the urgent need for the allocation of adequate funding to enable maintenance management groups to deliver quality services using competent professionals to address the problems for washrooms conditions. Nonetheless, the building conditions has some defects and safety hazards as its components were not too comfortable to the requisite standards. The conditions of buildings in particular can be judged in contradiction of the result the condition has, with adverse effect it will have on the building then the related facilities.

Therefore, the influence that defects have on the conditions of building if this is not well attended to, this will depend on how maintained it is and this will generate the factors with the nature of the defects, the user, the building integrity, needs and wants as well as the consecutive maintenance programme from the findings of (Olanrewaju et al., 2015), as shown in the hospital washrooms conditions above, this juxtapose accretion. The washrooms condition can be improved to ensure smoother movement and usability of the building, as well as efficient ventilation. Moreover, the maintenance workers demonstrated a desperate need for formal training to acquire the required skills as they were mostly unskilled. As previously mentioned, adequate funding should be made available to the maintenance management department to enable them deliver efficient maintenance services for the building conditions.

Conclusively, the causes of washrooms conditions decay in its state in which defects in the buildings also contributed notwithstanding Salleh, et al. 2020, Olanrewaju & Abdul Aziz 2014, Olanrewaju *et al*. 2018, the fact remains that they significantly deteriorate their quality and performances, diminish user satisfaction and prove extremely exorbitant to refurbish in the long run. Therefore, the proactiveness of the maintenance management department of the hospital buildings is crucial to ensure the efficiency of the buildings and preempt their irreparable decay.

6. Conclusions

This study evaluated the preliminary assessment of washrooms conditions of the hospital buildings in Malaysia and proffer practical solutions to alleviate the issue. The findings herein affirm the need to prioritize maintenance management and urges for the collaborative efforts of all the industry's stakeholders to adopt a proactive and holistic

approach towards maintenance management in order to ensure that the hospital buildings conditions are in a good state, and be ready to face the challenges, so as to have morale and good motivation (Jesumoroti, C.& Draai, W., 2021a). In doing so, it is pertinent to tackle the unfavourable conditions challenges that arise due to the slight comfortable conditions of the washrooms using a systematic and planned approach rather than a corrective one. In this regard, it is vital to encourage and imbibe a preservative maintenance management culture by inspiring people tolove and care for buildings, amenities and the environment.

Furthermore, if a buildings components conditions is only fixed when it reaches such a critical stage of squalor, the amount of work exceeds what would have been initially required and becomes even more cost intensive. Thus, relevant information and knowledge regarding washroom conditions can be utilized as a precaution to preempt failures before the occurrences and thereby curtail unnecessary expenditure due to unfavourable washrooms conditions. The washrooms conditions can be improved to achieve the desire services, which will be value added. Considering the fact, the onset of defective washroom condition in some buildings occur few years after they have been built, it is advisable to recognize that building components are vulnerable to change in state and initiate maintenance management from the onset. More importantly, instead of undervaluing maintenance management for washrooms conditions as an operational function, it must be prioritized as the paramount responsibility of top management who must include it in all its decision-making processes.

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