Adapting to environmental challenges: The impact of COVID-19 on shophouses courtyard space and gathering (George Town heritage city, Penang)

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Abstract. Recent studies demonstrate that the Covid-19 pandemic is a health and daily life crisis unmatched in human history. Restrictions on the exercise of social distancing and using innovative technology to virtually hold gathering have been the key policy measures to reduce the transmission of Covid-19 and to protect public health. International health organisations and governments precautionary measures for their people advise for physical distancing, total lockdown, and handwashing hygiene measures. Social distancing has redefined, reshaped, and reconfigured Straits Chinese families’ gatherings in a shophouse courtyard space. Hence, this paper bids to investigate the effectiveness and efficiency of these mechanisms by inhabitants and visitors in shophouses courtyard space and suggest possible ways to lessen future Covid-19, particularly concerning interior design components of a typical shophouse courtyard space. Thus, the paper adopts the phenomenology type of qualitative research. Data were collected via observations of selected traditional shophouses in George Town Heritage City, face-to-face interviews conducted and validated via secondary sources. Findings show that it is difficult to practice some of the precautionary measures as recommended by appropriate authorities in majority of the George Town Heritage City traditional shophouses. This is because of compact space, also renovation, and modernisation to the courtyard original design. Concerning the practical implications, this research is encouraging for the practice of social distancing on Straits Chinese gathering at shophouse courtyard space during pandemics such as Covid-19 to lessen the contagious pandemic spread in shophouses families in the future. This research further intends to trigger key stakeholders and conquer new areas for forthcoming study.

1. Introduction

Today’s global pandemic brings a new life system, using the public space underwent rigorous restrictions, imposed policy measures such as social distancing and lockdown have been the key to safeguard public health and reduce the transition of Coronavirus (Covid-19). Globally, including Malaysia, there are unequalled restrictions in the utilize of public and private spaces. [1] affirmed that most of the world’s population restricted movement in public places and encouraged stay at home. This is in line with Malaysian government requirements [2].

On 29th May 2021, Malaysia reported more than 9,000 cases which is the highest recorded in the country as at the time of writing this paper. Hence, this recent record spike-off infections and has forced the government to implement two weeks for nationwide full lockdown that took place between June 1
to 14, 2021 and extended for another two weeks, effective from June 15 to 28, 2021 due to the increase cases and above 5,000 daily. The World Health Organisation (WHO) portrayed the Covid-19 pandemic as an international health emergency. In a statement by the Prime Minister's Office, initiated four phases of Movement Control Order (MCO) four phases were initiated and social activities were discouraged to mitigate the spread of the virus [3].

George Town is a unique multi-cultural heritage demonstrating the hybrid traditions of the locals and foreign traders; for instance, the Straits Chinese or Peranakan Chinese [4]. Therefore, George Town City was recognised as a UNESCO World Heritage on 7th July 2008 (Penang, Malaysia) where traditional shophouses are situated and might have been influenced by the coronavirus disease (Covid-19). Thus, the purpose to preserve the Heritage City George Town, Penang could not be overemphasised in the face of this pandemic and future similar crises. One possible way this can be achieved is through a collaborative technique and the worthy cultural legacy of this city that has numerous aspects of history of the inhabitants and safeguarding them ought to be all-embracing. [5] confirmed that social events and family gatherings in George Town have gradually disappeared because house visits are not allowed. Also, discouraged is the interstate and cross-district activities to gather with their relatives. Scholars such as [5] suggested physical distancing, full lockdown, self isolation, regular hand washing, among others as precautionary measures to control the fulminate of the virus in inhabitants and visitors who reside in the traditional shophouse. Implementing these measures in shophouses courtyard space and gathering in Heritage City George Town is one area that is yet to receive scholarly investigation and should be investigated. Thus, the need for this paper.

2. Literature review

2.1. Brief history of Straits Chinese gathering in shophouses courtyard

The courtyard concept was interpreted as a plan arrangement traced back thousands of years to Neolithic settlements. Courtyards were adopted by the Mesopotamians around 3000 B.C., the Ancient Egyptians around 2000 B.C., and the Romans in Pompeii [6]. The traditional shophouse is an extraordinary symbol of a favourable design for urban settlers, around Southeast Asia. These buildings were mainly found in the Straits Settlements. This includes Penang, Melaka, and Singapore [7]. They offer both small trade and residence area, with a blending of one or two courtyards (air wells) as shown in Figure 1. A courtyard could form a partition break within the building, the early Chinese immigrants who built the traditional shophouses around this region and living for a long time in these buildings. The narrow and long layouts and the related courtyards (air wells) can be dating back to Southern China [8].

![Figure 1. Traditional courtyard shophouse.](image-url)
The courtyard shophouses design reflects the Straits Chinese beliefs and social values identity of local Malaysian Chinese in George Town Heritage City [5]. The courtyard plays a major role in creating a social space within homes or groups of homes. It also acts as a space to interact and space with a lot of activities, whether in groups or personnel or occupational.

2.2. The traditional shophouses courtyard space and gathering

Traditional shophouses have been built in George Town Heritage City 200 years ago. The Straits Chinese courtyard space plays a critical role in the traditional residential character for dealing with the local social gatherings and human well-being requirement [9]. Also, it is still a fundamental vital space for life custom in many countries [10]. Despite a courtyard space is part of the residential character, it may be shared by various families and visitors, such as traditional shophouses courtyard in George Town City. Also, it has valuable tourism resources [11]. Hence, the courtyard is considered as a substantial factor in architectural design and can be treated as a public space that leads to infectious diseases.

George Town City, Penang currently boasts about 7,000 shophouses. This is the largest collection of traditional shophouses in any one location around the world [12]. This distinctive form illustrates the influence of Chinese, Malay, and European styles blended in line with the local environment. A courtyard plan brought by Chinese immigrants. However, their composition and scale were different across the country. In general, the proportion of courtyards to structural space diminishes significantly from China to Malaysia [13]. Many scholars identified such as an active architectural space for sitting, eating, gathering, celebrating, playing, and even sleeping during hot summer nights. It performs many of the functions. The swift spread of the infection linked with the Covid-19 epidemic and the high level of morbidity is calling for suitable control measures [14]. Thus, this study investigates the efficiency as well as the effectiveness of the precautionary measures (self-isolation, physical distancing, and handwashing mechanisms) via occupants (visitors and inhabitants) in courtyard space and gathering in traditional shophouses George Town Heritage City. Also, the paper offers potential methods for future prevention of disease infectious in similar crisis, particularly regarding interior space elements of a typical courtyard shophouse.

2.3. Impact of Covid-19 pandemic on shophouses courtyard space and gathering

This section reviewed the impact of (Covid-19) Coronavirus on shophouses courtyard space and gatherings. Before the emergence of Covid-19 crisis, it was attracting many visitors and tourists to this Heritage City arrivals thousands daily. Hence, the 2018 report illustrated that about 28.5 million visitors took a tour [15]. This research focuses on the straits-eclectic style, a form of traditional courtyard shophouses. The traditional shophouses (eclectic style) in George Town classified into 6 main historical styles as identified by Penang Heritage Trust (PHT). The PHT is one of the non-governmental organisations in conservation and heritage of culture. This includes “Early Penang” Style (1790s-1850s), “Southern Chinese” Eclectic Style (1840s-1900s), “Early Straits” Eclectic Style (1890s-1910s), “Late Straits” Eclectic Style (1910s-1940s), “Art Deco” Style (1930s-1960s), and “Early Modern” Style (1950s –1970s) [16].

The world has witnessed dire consequences in various ways with the upgrowth of the Covid-19 crisis [5]. However, regarding its impact on traditional shophouses, scarce researchers give alertness to the sustainability of the heritage building [17] and it was affirmed that (Covid-19) Coronavirus have the hardest-hit on traditional social relations in Heritage City George Town. Because of the design nature of the courtyard, it is possible that the space provides a dynamic environment where the contagion had spread or is spreading quickly. This is because of the compact size of the layout, sometimes the intensity of the number of visitors and inhabitants [18].

Therefore, the government has issued directives to allow the residences only among family members from the same household for family reunion dinners. Thus, house visits are not allowed in the traditional shophouses. Also, the Hungry Ghost Festival, Festival of Tomb-Sweeping (Qing Ming), as well as Lunar-Festivals that allows the plurality of an inhabitants gain huge gatherings are prohibited. Many of the Straits Chinese families are struggling to celebrate and gather with their relatives and friends. This
is because of the travel restrictions across the country. There are potential solutions to lessen the spread of Covid-19 offered by many researchers around the world in the social gathering. However, there is insufficient in-depth studies regarding mitigating this pandemic in shophouses courtyard space and gathering from the perspective of inhabitants and visitors in traditional shophouses Heritage City George Town. Findings from this study will fill this gap.

3. Methodology
A qualitative research method was employed to acquire data for this study. A phenomenology type of qualitative design was implemented and will provide a superior enlightening method to explore how feasible to impose precautionary measures on inhabitants and visitors while gathering at traditional courtyard shophouses. This study is an investigative and engaged participants’ data gathering, who have had the knowledge and experience [19]; in traditional courtyard shophouses in the Heritage City George Town related to Covid-19. Data were obtained from the observation of 15 designated traditional shophouses; involve (Lots. 3, 5, and 7) in Street Fish (Lorang Ikan) at Heritage City George Town. One of the reasons for the inclusion of these shophouses is because they preserved their identities, cultural, and authentic artifacts of Heritage City George Town [20]. Face-to-face interviews were conducted with selected inhabitants and visitors that showed attention to be an interview and were questioned. Likewise, specialists in the topic issue were involved. The lack of literature in this research stirs the authors to adopt a qualitative approach via previous studies images while the validation was carried out through secondary sources (government documents, newsprints, and journals) [21]. A thematic analysis was adopted because the technique is used for analysing, identifying, and reporting themes within collected data from a study [22]. The findings from the two themes are presented and discussed in the next section.

4. Results and discussion
Many researchers concentrated on how to lessen the spread of (Covid-19) Coronavirus pandemic in Malaysia and other places of Asia with a very few involving inhabitants and visitors’ gatherings in the traditional courtyard space shophouses in George Town Heritage City. Life has become different from the Covid-19 era and forcing the people to stay at their house. The courtyard has become a venue for family daily gatherings and those for visits from neighbours. This huge gathering may boost the spread in the future of any contagious pandemic like Covid-19 in traditional courtyard shophouses. Thus, the need for this study as guided by the Ministry of Health of Malaysia and international health organisations such as the World Health Organisation (WHO) that provide an estimate concerning the efficiency of the precautionary measures to lessen the spread of (Covid-19) pandemic should be investigated and justified one of the reasons for this paper and offer potential proposals that could help to lessen future (Covid-19) pandemic in Heritage City George Town traditional courtyard shophouses. Findings show that the decision for lock-down (Movement Control Order (MCO)) by the Malaysian government has been accepted by majority of the participants. To them, this will mitigate gatherings or meetings and lessen the spread of coronavirus (Covid-19) at the Heritage City George Town and other places of the country. The main findings from this study are presented as follows:

4.1. The impact of Covid-19 on the shophouses space and gatherings
From the observation, findings show that the small space of the shophouses courtyard is the most preferable gathering for inhabitants and visitors. However, Lots. 3 and 5 share one restroom and Lot. 7 share one restroom facilities on the ground floor as shown in Figure 2. Some of the spaces were designed with a width less than 1.5 metre as against the minimum 2 metre recommended by the appropriate authorities. Findings reveal huge gathering in small space like in the shophouse courtyard and sometimes more than one family lives (family shared-shophouse). The outcome is potential impediments related to mitigation of Covid-19 pandemic spread. Participant 6 says, “… the space of courtyard inside Straits Chinese shophouse is small nowadays to invite friends or relatives especially we share one restroom
facility…. I think the courtyard is a cozy place to relax during the movement control order but not for a huge gathering...."

Figure 2. Location of the restrooms on the ground floor of lots. 3, 5, and 7.

Also, findings from observation show that the plurality of the traditional courtyard shophouses in Heritage City George Town have been refurbished, renewed, and modernised across the latest years creating it challenging to quarantine of likely Covid-19 case within a family resident in the shophouse. Through the procedure of renewed and modernised, several spaces were sealed, for example, the courtyard (air wells), among others. Hence, the closed courtyard natural environment was not secure for inhabitants and visitors, particularly in static-wind situations. Findings agree with [9] and it was affirmed that the closed space will generate static-wind situations, become speedy infection risks in the (air well) courtyard were equivalent to those in rooms midst the (Covid-19) time. Participant 13 says. “. . . Our shophouses are pleasant and airy naturally ventilated, we don't need to switch on the air-conditioning which is a much healthier environment. The indoor courtyard air wells provide garden space as well, but we cannot hold huge gathering these days as fitting families and relatives can be a challenge. One family to isolate in a shophouse is feasible unless the original design of a shophouse have not been changed, such as illegally closing the courtyard (air well) or close the front air vents and changing timber louvre shutters to glass windows.” Figure 3 shows the pictorial representation of what Participant 13 refers to regarding not switching on electricity. Regarding strategies of indoor natural environment control, some artificial measures such as ventilator and purifier applied outdoor can be appraised to originate healthy (air well) courtyard environment in Heritage City George Town [14].

Figure 3. Interior perspectives for lots. 3, 5, and 7 shophouses courtyards view.
4.2. Innovative ways for gathering during Covid-19
Majority of participants agreed that total lock-down, regular hand washing, self-isolation, and physical distancing will lessen the Covid-19 pandemic increase within George Town City. Participant 7 says, “...we are starting accurately follow the Health Ministry rules of avoiding crowds and huge gathering, also frequent handwashing, physical distancing, and self-isolation to keep away spread of the pandemic the shophouse.” Findings agree with [23] and it confirmed that 13 of the 15 inhabitants tested Covid-19 positive in June 2020 at a traditional shophouse on Veerasamy Street in Little India (Singapore). Lax compliance to the rules for the precautionary measures as suggested by the appropriate authorities may be the reason for the increase. Participant 4 says, “.... currently we are using innovative technology to virtually hold gatherings and connect with our relatives and friends, such as Facebook live, Skype, Zoom, WhatsApp, and Instagram. This offered a comfortable opportunity to reach to others while practising social distancing.” Findings agree with [24] and it was found that the most outstanding innovation sparkled by the sudden in-person interruption visiting or gathering is a transfer into “virtual” meeting.

Findings show that majority of participants agree that these precautionary measures are not enough to lessen the increase of (Covid-19) Coronavirus in legacy traditional courtyard eclectic style shophouses. Thus, the interviewers suggest the need for regular treatment of the shophouses open courtyards (air wells), air vents, lime plaster walls, timber shutters, and long inside spaces. The (heat absorbing tile roof) must not be changed with different materials components emerged too as one of the suggestions. If there must be replacement, emphasis should be in line with the regulatory authorities in charge of the Heritage City George Town so that an originality of an architectural characteristics would be sustained. Findings agree with [5] and it was found that the shophouses are not healthy to live with, because some of the owners close the courtyards and air vents and convert the heritage components to modern components. Furthermore, should hinder sharing of washroom facilities within (two or more rooms) to encourage physical distancing in the future design and structure of traditional shophouses (Participants P5, P6, P8). This will improve the efficiency of the Movement Control Order (MCO) to be monitored and minimise gather with other visitors and families in the interior traditional shophouses. Additionally, to providing for watching and fulfilment the Special Area Plan (SAP) concerning the World Heritage Sites (WHSs) (Participants P2, P3, P5, & 7). Nowadays, unavailable and might prevent the sustenance plan of the Heritage City George Town rank as one of the remarkable World Heritage Sites if the authorities do not take action now.

5. Conclusions
Huge private social gatherings during the Covid-19 term resulted in increasing (Covid-19) Coronavirus cases within Heritage City George Town and across Malaysia. Social distancing strategy during the Covid-19 period has brought some irreversible consequences to social gathering in traditional shophouses courtyard. With a specific focus on Straits Chinese gatherings in traditional courtyard shophouses, this study has expressed some socio-behavioural changes among inhabitants and visitors because of social distancing that has come to stay. Apart from physical distancing, frequent handwashing, the role of innovative technology via virtual gatherings, among the potential policies that emerged from this study, the need to revisit the design mechanisms for traditional courtyard shophouses eclectic style Heritage City George Town and across the globe to combine characteristics that will reinforce the traditional shophouses eclectic style to play the role of precautionary measures in lessen future (Covid-19) and other contagious pandemics cannot be over-emphasised as recommended for future studies.

In future design, these features should be considered to ensure that courtyard space only allows small gathering and distributing the furniture with two meters apart and wearing a mask for the visitors during the gatherings. Also, the designers and architects should study the original eclectic style shophouses which have open courtyards (air wells), façade open air vents, timber shutters, long inside spaces, a heat absorbing tile roof, then pursue the similar method in their future construction and design. The design
team must investigate the original shophouse which still has timber shutters, open-air wells, lime plaster walls, a heat absorbing tile roof, long inside spaces, and pursue the similar method in their future renovation and design. Moreover, there is a necessity to clean up the courtyard from needless furniture, maximise the space, and ensure that the restroom facility is not shared among the inhabitants and visitors gathering in the courtyard of the shophouses as requested by the Ministry of Health of Malaysia (MOH), and International Health Organisations such as the World Health Organisation (WHO). These suggestions should be subjected to further studies.

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