

# Learners' Perceptions on MyDispense Virtual Simulation in the Philippines

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**Abstract:-** MyDispense, a virtual simulation developed by the Faculty of Pharmacy and Pharmaceutical Sciences at Monash University, aims to give experience to learners to practice their drug dispensing skills without harm. This study sought to determine the learners' level of perception of MyDispense virtual simulation on participation, interaction, accessibility, self-directed, and adaptability. The research utilized a mixed qualitative and quantitative method through purposive sampling technique among pharmacy students from Philippine institutions that applied MyDispense in their curriculum. An online survey through Google Forms was conducted among three hundred twenty-two (322) respondents analyzed using descriptive statistics and chi-square test for the quantitative section and Thematic Content Analysis (TCA) to determine the barriers, challenges, and recommendations when using MyDispense. Results showed that respondents were mostly female (78.9%), in their second year of college (55.90%), had internet speed of 3-5 Mbps (38.51%), and were studying in the southern part of the Philippines (83.54%). The study revealed high levels of perceptions of MyDispense for virtual dispensing practice expressed in mean values of learners' participation (3.97), interaction (3.47), accessibility (3.53), self-directed (3.55), and adaptability (3.76). Moreover, significant relationships ( $p < 0.05$ ) were found on participation & internet connectivity (0.000); accessibility & internet connectivity (0.05); self-directed & institution (0.000); and adaptability & year level (0.030). Filipino pharmacy students had experienced various challenges in using MyDispense, such as connectivity issues, gadgets incompatibility, etc. but found ways to overcome them. The study concluded that MyDispense could be a promising tool for reinforcing community and hospital pharmacy dispensing practice skills to students during their pharmacy education.

**Keywords:-** Learner, Perception, Virtual simulation, MyDispense, Philippines.

## I. INTRODUCTION

A core skill for pharmacists is dispensing, as even the slightest dispensing error can potentially risk a patient. The consequences of poor dispensing skills may subject patients to increased monetary cost, psychological suffering, physical pain, decreased patient satisfaction, and a lack of trust in the healthcare system [1]. As such, in numerous countries, it is a significant subject of pharmacy education.

Simulation-based education (SBE) is a method of augmenting and developing healthcare professionals' clinical skills. Clinical scenarios are simulated for teaching and learning purposes, providing opportunities for the deliberate practice of new skills without involving actual patients [2]. Virtual patients, usually created by a computer software program, are utilized in pharmacy training to simulate practical clinical cases [3].

MyDispense, an SBE, is gaining popularity within pharmacy education [4]. It helps users evaluate, verify, and dispense a prescription as if they were in an actual community pharmacy. The software enabled them to encounter practical situations a pharmacist faces in the community setting [5]. The system provided students with videos that assisted them in navigating how to complete and submit tasks. The innovators also provided key points showing students dispensing techniques to enhance their performance in virtually simulated cases and further their dispensing skills [4]. Moreover, users can repeat the activity and check the feedback if they handle the given situation properly [6].

MyDispense, a web application developed by the Faculty of Pharmacy and Pharmaceutical Sciences at Monash University, Australia, has experienced exponential growth since the beginning of the pandemic due to the prohibition of face-to-face classes. Some countries using the tool include Germany, South Africa, Sweden, Somalia, Pakistan, Botswana, Zimbabwe, and Nepal. There has been a particularly notable surge in users based in the Philippines and Sweden. A virtual simulation like MyDispense has attempted to improve students' learning environment even in the solace of homes. Thus, it led to many studies to analyze students' perceptions of their educational environment.

## II. METHODS

### A. Study Design

This study used a mixed quantitative and qualitative design. The quantitative section sought to discover the significant relationships between the socio-demographic characteristics and the pharmacy students' level of perception of MyDispense virtual simulation. It used a survey questionnaire to investigate this study's variables. The qualitative approach assessed the students through essay questions available through Google forms. These questions include those that ask about the advantages, barriers, and challenges the responders experienced as well as the recommendations they have to improve the overall experience while using MyDispense.

### B. Subject Participants

The participants of this study were pharmacy students from universities and colleges in the Philippines that utilized MyDispense virtual simulation as part of their curriculum and have an official Uniform Resource Locator (URL) address of MyDispense. The study included four identified universities and colleges assigned with codenames (i.e., S-1, S-2, S-3, and S-4). Purposive sampling was used to determine which students would be selected as the study respondents. However, in the context of the study, the researchers ensured a range of 40 to 50 percent per school population. For the inclusion criteria: 1) Respondent must be a bona fide college student currently enrolled in the Bachelor of Science in Pharmacy course in the Philippines that has an official URL address of MyDispense; 2) Respondent must have experienced using the MyDispense virtual simulation and completed at least two MyDispense cases; and (3) Respondent must have an internet connection and gadget to be used. For the exclusion criteria: 1) Respondent must not be a graduate of any baccalaureate degree; and 2) Respondent must not be currently enrolled in another course.

### C. Instrument

This study utilized an adapted and modified online survey questionnaire from the research studies of Oser (2013), Fortune et al. (2011), and Paul (2006) [7,8,9]. The survey tool consisted of three parts with a total of twenty-five (25) questions. The first part comprised seven questions about the respondents' socio-demographic backgrounds. The second part included fifteen (15) equally distributed statements among the five factors of perception that utilized a five-point Likert scale system, with one (1) strongly disagree and five (5) strongly agree. The last part of the survey tool consisted of four questions that required short essay answers about the advantages, barriers, challenges, and recommendations for using MyDispense. The researchers conducted pilot testing to test the appropriateness and clarity of the questions. It was then evaluated using Cronbach's alpha, a reliability coefficient that showed the connection of the items. The general rule of thumb is that a Cronbach's alpha of 0.70 and above is

considered good and acceptable, yet 0.80 and above is better and preferred [10]. The survey tool used obtained a reliability score of .874, which corresponds to the rule as better. Hence it is considered very reliable. It took ten (10) to fifteen (15) minutes to answer the survey questionnaire.

### D. Data Collection Procedures

Before collecting data, the researchers sought approval to conduct the study with their students from the institutions. The researchers sent letters via email to each institution's dean for their approval of the research and asked to provide students' lists with their email addresses. Once approved, the researcher team sent each participant an informed consent form. The respondents' participation is voluntary. Maximum efforts were made to maintain confidentiality, anonymity, and privacy of the respondents' data and responses. The questionnaires were not numbered, and their names and the institutions of where they came from were not revealed. The researchers did not share information about the respondents with anyone outside the research team.

### E. Data Analysis

Diagnostic analysis was employed before running inferential analysis, such as the test of normality and homogeneity of variance. After data gathering, descriptive statistics, specifically frequency and percentage, were used to determine the socio-demographic profile of the respondents. Mean was used to determine the level of perceptions of pharmacy students towards MyDispense virtual simulations. The level of interpretation for the mean value is adopted from Al-Mutawah and Fateel (2018) : 1.0 - 1.79 (very low), 1.80 - 2.59 (low), 2.60 - 3.39 (moderate), 3.40 - 4.19 (high), and 4.20 - 5.00 (very high) [11]. The Chi-Square test was used to determine if there is a significant relationship between socio-demographic profile and the level of perceptions of pharmacy students. Thematic Content Analysis (TCA) was used to determine the advantages, barriers, and challenges encountered by the pharmacy students and the recommendations to improve their MyDispense experience.

## III. RESULTS AND DISCUSSION

### A. Sociodemographic Profile

A total of three hundred seventy-three (373) pharmacy students were invited to participate in the study, and three hundred twenty-two (322) answered the survey completely for an 86.32 percent response rate. A majority of second-year students (55.9%) and female (78.9%) respondents took the survey, supporting the study by Al-Hindi and Mojally (2021) that most users of MyDispense are female [12]. The dominant institution was from S-2 (83.54%). Most respondents completed ten (10) and above cases in MyDispense (63. 67%) and used 3-5 Mbps (38.51%) internet speed. Further details on sociodemographic characteristics are presented in Table 1.

| Profile                       | Frequency  | Percentage    |
|-------------------------------|------------|---------------|
| <b>Year Level</b>             |            |               |
| <i>Second Year</i>            | <b>180</b> | <b>55.90</b>  |
| Third Year                    | 142        | 44.10         |
| <i>Total</i>                  | <b>322</b> | <b>100</b>    |
| <b>Institution</b>            |            |               |
| S-1                           | 29         | 9.006         |
| <b>S-2</b>                    | <b>269</b> | <b>83.54</b>  |
| S-3                           | 14         | 4.348         |
| S-4                           | 10         | 3.106         |
| <i>Total</i>                  | <b>322</b> | <b>100</b>    |
| <b>Sex</b>                    |            |               |
| <i>Female</i>                 | <b>254</b> | <b>78.882</b> |
| Male                          | 63         | 19.565        |
| Rather not state              | 5          | 1.553         |
| <i>Total</i>                  | <b>322</b> | <b>100</b>    |
| <b>Average Internet Speed</b> |            |               |
| 1-2 Mbps                      | 76         | 23.602        |
| <b>3-5 Mbps</b>               | <b>124</b> | <b>38.509</b> |
| Greater than 5 Mbps           | 108        | 33.54         |
| Less than 1 Mbps              | 14         | 4.348         |
| <i>Total</i>                  | <b>322</b> | <b>100</b>    |

Table 1: Demographic Profile of the Respondents

#### B. Level of Perception

On the second part of the survey tool, the respondents were asked to rate a given statement based on the five-point Likert scale: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree [13]. The factors affecting learners' perception of MyDispense virtual simulation were pre-determined and limited to five (5): participation, interaction, accessibility, self-directed, and adaptability. Each factor had three (3) statements describing the varied situations for a total of fifteen (15) statements.

The survey results indicated a high level of perception among the respondents on utilizing MyDispense virtual simulation as a tool to maximize the learning of dispensing practice, as presented in Table 2. Based on the five parameters measured, students expressed high confidence in the MyDispense simulation and revealed mean values of 3.97 (participation), 3.47 (interaction), 3.53 (accessibility), 3.55 (self-directed), and 3.76 (adaptability).

| STATEMENT   | MEAN | LEVEL <sup>a</sup> | OVERALL MEAN | OVERALL LEVEL* |
|---|------|--------------------|--------------|----------------|
| <b>Participation</b>  |      |                    |              |                |
| I am prepared to begin before proceeding to a case in MyDispense.   | 3.76 | High               | 3.97         | High           |
| I provide as much information as needed in the counseling area for MyDispense                                   | 4.00 | High               |              |                |
| I get motivated by thoroughly searching information about each drug and its interaction in MyDispense.          | 4.14 | High               |              |                |
| <b>Interaction</b>  |      |                    |              |                |
| The MyDispense virtual simulator makes it easier for me to speak with my patient in real-life situations        | 3.51 | High               | 3.47         | High           |
| The MyDispense virtual simulator makes it simpler for me to communicate with my educator.                       | 3.44 | High               |              |                |
| I am able to engage with my classmates in real-time while using MyDispense.                                     | 3.48 | High               |              |                |
| <b>Accessibility</b>  |      |                    |              |                |
| I am able to freely access MyDispense on any gadgets I own.   | 3.41 | High               | 3.53         | High           |
| I can access MyDispense whenever and wherever I am.   | 3.14 | Moderate           |              |                |
| References (e.g., Drugs.com, MIMS, etc.) are available, which are easy for us students to access in MyDispense. | 4.04 | High               |              |                |
| <b>Self-directed</b>  |      |                    |              |                |
| I work at my own speed regarding the activities I do in MyDispense.   | 3.66 | High               | 3.55         | High           |
| I am given a choice of tasks regarding the activities I do in MyDispense.                                       | 3.58 | High               |              |                |
| I am given the freedom to answer the activities in MyDispense at any time of the day I want.                    | 3.42 | High               |              |                |
| <b>Adaptability</b>   |      |                    |              |                |
| I have mastered the control of elements in MyDispense.  | 3.53 | High               | 3.76         | High           |
| I feel excited by the coursework while practicing MyDispense.   | 3.63 | High               |              |                |
| The course materials in MyDispense support my ability to learn and experience new skills.                       | 4.11 | High               |              |                |

Table 2: Mean Level of Perception on the Use of My Dispense

<sup>a</sup>Based on the level of interpretation for the mean value adopted from Al-Mutawah and Fateel (2018).

### C. Test of Relationship

This study used chi-square analysis to determine if there is an existing significant relationship between the demographic profile and perception level among students on the utilization of MyDispense simulation. The result of the test of the relationship between the five socio-demographic characteristics and the extent of use of MyDispense with the five factors of perception are shown in Table 3.

In terms of participation, the year level ( $p=.495$ ), institution ( $p=.511$ ), and gender ( $p=.415$ ) do not associate significantly with the said factor of perception. However, internet connectivity with a p-value of .000 is observed to have a particular trend: an increase in internet connectivity is associated with a higher percentage of participation. In other terms, there is a significant relationship between internet connectivity and the participation of students in using MyDispense. This finding is related to the study of Fogg *et al.* (2020), as students have voiced their concerns about internet connectivity issues. Students who lack internet resources showed an absence of motivation to participate in virtual simulations since they do not get the

experience of a virtual simulation to its extent due to internet connection problems [14].

Meanwhile, in terms of interaction and its relationship with the five socio-demographic profiles, the results showed that all characteristics [i.e., year level ( $p=0.45$ ), institution ( $p=0.19$ ), gender ( $p=.116$ ), and internet connectivity ( $p=0.28$ )] showed no signs of trends with the factor. The aforementioned demographic profile cannot dictate nor influence the students' interaction with using MyDispense. Thus, the socio-demographic characteristics have no significant relationship with the factor interaction.

There was no significant relationship between the socio-demographic profiles with the accessibility of the students in using MyDispense: year level ( $p=0.27$ ), institution ( $p=0.45$ ), and gender ( $p=0.546$ ). Nevertheless, a trend can be seen in internet connectivity, with a p-value of .05. An increase in the said profile is associated with a higher percentage of accessibility. Hence, the internet connection of the students is significantly related to their accessibility to the website. In relation to this result, the study of Dameh (2015) revealed that an internet connection

could be a problem if it is too slow to load the software. Technical issues due to internet connection and other computer problems may result in frustration for the learners [15].

In the relationship between self-directed and the five demographic features, the year level ( $p=.06$ ), gender ( $p=0.923$ ), and the internet connection ( $p=.09$ ) have no significant association with the said factor of perception. Contrarily, the institution with a p-value of .000 appeared to have a significant trend in self-directed. It is observed to increase as the percentage of self-directed increases, indicating a considerable connection between self-directed and institution. It can be ascertained that there is a higher number of respondents coming from institution S-2 than the remaining institutions, dominating the respondents to the said school. However, this data should be cautiously interpreted because a challenge in the conduct of the study was experienced in reaching out to the identified institutions. A contributing factor would be the current pandemic caused by COVID-19.

Lastly, the study showed the relationship between the five socio-demographic profiles and the adaptability of using MyDispense. Three factors, namely: institution ( $p=.350$ ), gender ( $p=.586$ ), and internet connection ( $p=0.34$ ), have shown negative signs of association with adaptability. On the other hand, the year level ( $p=.030$ ) has a trend that is significantly associated with adaptability. A higher number of second-year pharmacy students is seen using MyDispense compared to the third-year students. Consistently, more sophomores have answered "strongly agreed" and "agreed" than juniors. This is why the responses mostly come from and are overpowered by the second-year students. In the study of Coyne *et al.* (2020), the ease of usage and engagement of virtual simulation is influenced by the year level of the students involved. It revealed that the older the student, the lower usability and concentration of the virtual simulation [16]. However, this difference might be attributed to a disparity in the percentage of the sample distribution.

| FACTOR               | SOCIO-DEMOGRAPHIC PROFILE |             |        |                         |
|----------------------|---------------------------|-------------|--------|-------------------------|
|                      | Year Level                | Institution | Gender | Internet Connection     |
| <b>Participation</b> | .495                      | .511        | .415   | <b>.000<sup>b</sup></b> |
| <b>Interaction</b>   | .45                       | .19         | .116   | .28                     |
| <b>Accessibility</b> | .27                       | 0.45        | .546   | <b>.05</b>              |
| <b>Self-directed</b> | .06                       | <b>.000</b> | .923   | .09                     |
| <b>Adaptability</b>  | <b>.030</b>               | .350        | .586   | .34                     |

Table 3: Summary on Test of Relationship between Socio-demographic Profiles and Factors of Perception in Using MyDispense

<sup>b</sup>: P-values below 0.05 shows there is a significant association between a variable and a factor

#### D. Advantages, Barriers, and Challenges, Recommendations

##### a) Realistic Learning Environment

MyDispense ensures a realistic learning environment with a wide variety of personalized conditions intended for the practice of medication dispensing for outpatients in a virtually simulated community pharmacy setting [17]. The various advantages of online learning make it indispensable. They provide training when face-to-face education is not possible and improve the acquisition of practical skills and competencies through new technologies, simulators, 3D platforms, gamification, etc. [18]. Exercises were structured to systematically integrate the relevant knowledge, critical thinking, technical activities, communication skills, and values necessary for developing dispensing skills [19].

*"As a pharmacy student, it is somewhat helpful in practicing your communication skills and critical thinking when encountering a customer. It gives you*

*an idea on what you should do and not what to do in the pharmacy setting" [Respondent 56].*

*"As a user, one of the advantages that MyDispense provides - it develops interpersonal skills by interacting with patients and other health professionals. Another is we can practice as many [times] as we want, as many times as we wish" [R102].*

As seen in the result of the quantitative part of this study, most respondents felt that the virtual stimulator made it easier for them to communicate. MyDispense can be customized to allow students to develop more medication dispensing skills and receive immediate feedback after completing the exercise [20]. Communication in counseling and dispensing to patients and healthcare providers are essential competencies for student pharmacists to master before graduation [21]. The software puts students in an actual situation in a community pharmacy, where they can interact with the patients

virtually in various exercises, such as simulating dispensing medications, counseling patients, and communicating with other healthcare providers, effectively optimizing patient care [22].

*"Was able to experience patient counseling that was based on real-life scenarios through Mydispense" [228].*

*"It gives us the opportunity to practice our dispensing skill and counseling through a virtual simulation with realistic activities" [R229].*

MyDispense has constantly been modifying its current features to allow its users to experience the virtual simulation more flexibly [23]. It is designed to assist students in developing their learning skills without compromising the experience of having a realistic approach to its transition [24].

*"It gives us a virtual experience or overview of what it feels like to be on an actual community pharmacy setting. It helps develop our potential skills as future pharmacists in the making. It allows us to learn how we can handle healthcare-related situations and concerns, as well as creates room for improvement for some mistakes. It gives a good learning experience" [R42].*

*"It enables learning without risking the health and medication dispensing in real-life situations" [R253].*

Also, as seen in the result of the quantitative part, most users said that the course materials in MyDispense support them in learning and experiencing new skills. The study of Ferrone *et al.* (2017) revealed that MyDispense endorsed students' ability to learn skills to gather patient information, ask appropriate questions, counsel patients, and practice the dispensing process [5].

#### b) Accessibility

In terms of the accessibility of the program, learners who have laptops and internet connections can access MyDispense on the web, anytime and anywhere [15]. But, the interactive 3D environment of the said virtual simulation relies on specific plugins, and there is a possibility that the application's performance would drop on other devices with lower specifications [25]. Gadgets play a role as they are a source of learning and make learning comfortable, effective, and efficient to improve students' learning outcomes [16].

*"Basically, I always try my best to find other devices given that our laptop is charger-dependent. These devices would serve as alternative equipment that can be used if there's an unannounced electric interruption" [R20].*

*"I sometimes borrow the Laptop of my father or my sister" [R245].*

During the global pandemic, the accessibility of educational data is even more relevant and necessary. The utilization of virtual simulated learning methods becomes vital as it accounts for students' progress even without face-to-face interaction to provide a successful learning experience [26].

*"Accessible, especially nowadays that our education has shifted to virtual learning" [R239].*

*"It is accessible since you could use it via your gadgets. It also suffices what I need especially during this pandemic where we cannot have face-to-face classes" [R237].*

As seen in the result of the quantitative part of this study, the accessibility of MyDispense is high. However, respondents felt they could freely access MyDispense on any gadgets they own but cannot easily access MyDispense whenever and wherever they are. This problem can be due to a slow internet connection, resulting in late assessments and repetition of tasks. They must have ample hardware for computers and stable internet connections [27].

*"The reloading of the website whenever the internet connection is slow which reformats the activity or exercise I am doing." [R170].*

*"The internet connection is the only issue and the timer does not stop it still continues and it's a big issue." [R88].*

Internet connectivity affects students' participation, as seen in the quantitative part of the study. Virtual simulations need to have a high-speed internet connection for a smooth operation. Instructors must also have technical skills to teach their students how to learn and engage in virtual simulations [16]. It is vital to have a stable internet connection while using MyDispense to prevent any problems and interruptions. Respondents find different ways to handle this challenge, such as finding a good place with a stable internet connection and data backup.

*"I would use data or I go to other place that has a strong signal or has wifi" [R10].*

*"Find good internet connection and have back-up data on my phone, though data is slower than broadband" [R189].*

MyDispense has different accessible references, such as Mims and drugs.com, wherein they can freely look into a specific drug and its essential information. These references would help students effectively use resources and consolidate their knowledge of contraindications and drug interactions [28].

*"Using mims, drugs.com and rxlist to search for additional information regarding cases which are unfamiliar" [R63].*

*"The good thing about MyDispense is that there are a lot of references like MIMS and Drugs.com which are readily available and easily accessible in MyDispense. These references are actually very useful in answering the different cases" [R105].*

#### c) Technical Management

At the start of its refinement and adjustments, loading the software fully and testing the system was impossible. Limited users were only allowed to maneuver through the software due to short timeframes. With this matter, the respondents have experienced system glitches as the virtual system adjusts to the heavy traffic it receives. The innovators provided development solutions, and tutorials were available on the MyDispense website [29]. Also, technical problems due to connection and other computer problems may result in frustrations for the learners, leading to system glitching responses [30]. The implementation of the MyDispense software presented many challenges, primarily on the software itself.

*"It often crashes or becomes unavailable on my laptop, I guess because my laptop isn't upgraded? As well as it is not responding" [R312].*

*"There is traffic sometimes whenever simultaneous users are opening the virtual simulation site" [R263].*

*"Constant errors, such as the labels not being properly placed in the final submission, images not loading but the timer's still running. Sometimes the timer is not in sync and causes error in submission" [R239].*

In connection with the system glitches, it led to the virtual program crashing or taking too long to connect. Users also reported the cases taking too long to complete. The student has the option of self-directed learning because simulations can only occur during scheduled times, limiting their usefulness [31]. As you can observe, the barriers are most likely connected - the internet connectivity to the glitches of the virtual simulation application down to time constrictions.

*"Because it is online and they are sometimes timed, I am not always able to counsel my patients well due to the fact that I look for information very slowly (unknowingly), the internet connection is also very uncooperative at times, and there are cases where I am not able to identify that the case is different from the other cases given" [R190].*

*"It's really hard to juggle so much information at once. I'm never sure what is relevant or not. I end up taking a whole day on a single case; I don't really*

*have time. Also, I find it weird that I can't really talk to the patient. It's so hard to integrate a dosing regimen in a patient's day-to-day life when you can't ask about said patient's day-to-day life" [R286].*

*"The time to finish each case is not enough. It requires fast internet connection and can only be accessed by laptop. Each case has only one attempt" [R305].*

Respondents suggested that MyDispense should be swift in updating its system to be easy to navigate and accessible in the future. Justifiably, it was impossible to load the software fully and test the system at the start of its refinement and adjustments. A published study stated on the implementation of MyDispense that there is a need for appropriate student guidance, orientation, and tutorials provided to the students [32].

*"The run of the simulation could be smoother. Fonts could be bigger, especially for the auxiliary labels, and a possible improvement is the option to be exposed to different kinds of pharmaceutical workplace settings, like the option to pick between settings like Hospital Pharmacy or Community Pharmacy" [R118].*

*"Enhancing simulated dispensing tutorials with hands-on dispensing training using currently accessible dispensing programs, modifying the features and portrayal of the avatars used in the application to fit the local background" [R274].*

*"Improvement of the design of the user interface of MyDispense for easier navigation and better appearance of the application for the user" [R317].*

#### E. Discussions

Most respondents are confident that they have the necessary knowledge and skills before proceeding to a case in MyDispense. They also get motivated to thoroughly search for information about each drug and its interaction and provide relevant information in the counseling area. McDowell *et al.*'s (2016) study, showing students' progress, can back up this finding [19]. The study of Barrack *et al.* (2021) also indicated that students who completed MyDispense exercises before a 100-to-120-hour practice rotation received higher preceptor scores for patient counseling of self-care and medications ( $p < 0.05$  for both) [33].

Most students felt they were prepared to counsel for self-care and medications. They somewhat agreed that the MyDispense virtual simulation has an advantage in making speaking with patients in real-life situations easier in the future. The result is related to the study of Li *et al.* (2018). It stated that decreasing the pharmacists' interaction with their patients creates a trust boundary between the two, resulting in pharmacists' difficulty building relationships with their patients [20]. In relation to this finding, a recent study from Barrack *et al.* (2021) also found that students felt less

confident in counseling patients on medications or preventative care. This may be attributed to the simulation aspect of MyDispense, which cannot fully mimic the intricacies of human behavior or interactions [33]. However, in the study of Garjani *et al.* (2009), MyDispense can provide learners a possible interaction with patients. They can do fact-finding in which learners can ask questions, and the patient can also ask the pharmacist about their medication. In this way, the learners may communicate with the patients, just like in an actual situation in a community pharmacy [34].

Most respondents have moderate levels of perception in terms of accessibility, mainly affected by the results that respondents felt neutral that they can freely access MyDispense on any gadgets whenever and wherever they are. This finding can be traced to Dameh's (2015) study, which revealed that technical problems due to internet connection and other computer problems could cause frustration to the learners [15]. In addition, the University of Illinois Springfield (n.d.) noted that the learner's location might affect the internet connection and cited it as a weakness of online learning [35].

Most respondents have high levels of perception in terms of self-directed, which supports the study of Ortega-Morán *et al.* (2020) that MyDispense enables students to progress in their learning abilities efficiently [36]. Respondents also agreed that they are given a choice of tasks in MyDispense due to the application's ergonomic exercise design, as pointed out by Klitsie (2019). The instructors can arrange and set up exercises with varying clinical information and levels of analytical difficulty to test students according to the lessons [29].

The students are confident that they have mastered the control of elements in MyDispense and that with the help of MyDispense, they can continue to learn and experience new skills related to pharmacy. This result has proved that their adaptability to using MyDispense, a new technology that teaches online pharmacy-related skills, is high. The students can now adapt and easily cope with the latest learning method, making them more adaptable to easily cope with future circumstances without compromising their learning experience [36].

#### IV. CONCLUSION

MyDispense is a virtual simulation where Pharmacy students can practice dispensing drugs to patients in a virtual environment, helping them explore the possibilities in each dispensing situation. This study demonstrated that students' perception of the virtual simulation was affected by their internet connectivity, one of their socio-demographic profiles, which is emphasized in their 'participation' factor. More so, the socio-demographic profile 'institution' and the factor 'self-directed' have shown a trend together, which can be observed when the former increases, the latter does, too. It can be ascertained that there is a higher number of respondents coming from S-2 than the remaining institutions, dominating the respondents to the said school, which should be interpreted with caution. Students have

experienced challenges in using MyDispense but found ways to overcome them.

The study proved that MyDispense could be a viable option for introducing and reinforcing community pharmacy practice skills to students during their pharmacy education. It also revealed that MyDispense allowed students to gather patient information, ask appropriate questions, counsel patients, and practice the dispensing process. As the battle against the COVID-19 pandemic continues, My Dispense can help the pharmacy education curriculum to adapt to the new learning system to fulfill the learning adherence we all need.

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