Project Title

Virtual Reality competency training and assessment tool for processing of prescriptions and medication orders

Project Lead and Members

Project lead: Tsang Wing Yee

Project members: Chen Yufei, Irvin Lee, Mitchell Ee, Petrina Fan, Shakunthala D/O Hans Raj and Tan Zee Jian

Organisation(s) Involved

Singapore General Hospital (SGH)

Serious Games Association (SGA)

Project Period

Start date: October 2019

Completed date: December 2020

Aims

Picking and packing of medications is a core operation activity in Pharmacy to deliver safe and effective medications.

Currently, didactic and On-The-Job Training (OJT) are provided in our Department to ensure pharmacy staff and trainees meet the National Pharmacy Competency Standards for Pharmacists and Pharmacy Technicians for processing of medications. However, the current training solution alone may not be sustainable due to OJT challenges. Some of the challenges include highly labor-intensive training, limited trainer's availability and difficulty in providing accurate and timely feedback to the trainees in fast-paced work environment.

In 2020, our Department was awarded the Learning Technology Adoption Grant by SkillsFuture Singapore to develop an innovative training solution – Project VRx, to

complement current training and address challenges faced today. Project VRx is an innovative high-fidelity virtual reality Pharmacy 5-stage dispensing simulation training program to equip pharmacy staff and trainees with knowledge to process prescription and medication orders safely and accurately.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

a) Each team member played an important role in developing the curriculum, storyboard and game mechanics, as well as, implementing the simulation training for new staff and trainees.

b) Open communication and regular engagements with the Solutionist for the development of the storyboard and virtual reality simulation training was essential to ensure a successful completion of the project.

c) Virtual reality simulation has proven to be able to highly engage the younger generation of learners. They find this method of learning interactive and more conducive especially in a fast paced environment like SGH.

Conclusion

See poster appended/ below

Additional Information

Singapore Allied Health Conference (SAHC) 2021 – Poster Presentation (Merit Award): Innovation & Digital Strategies

Project Category

Healthcare Training and Education

Keywords

Healthcare Training and Education, Technology, Simulated Training, Assessment, Virtual Reality, Gamification, Pharmacy, Singapore General Hospital, Serious Games Association, Prescription, Medication Orders, Pharmacy Competency Training

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VIRTUAL REALITY COMPETENCY TRAINING AND ASSESSSMENT TOOL FOR PROCESSING OF PRESCRIPTIONS AND MEDICATION ORDERS – PHARMACY STAFF AND TRAINEES' PERCEPTIONS

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Singapore Allied Health Conference 2021

INTRODUCTION

Virtual reality (VR) technology is increasingly used in healthcare education as this solution offers an immersive and interactive environment that mimics real world experiences to reinforce didactic and practical concepts. VR may become an integral part of our pharmacy workforce training.

Processing prescriptions and medication orders is one of the core pharmacy activities and part of the National Pharmacy Competency Standards for Pharmacists and Pharmacy Technicians. In line with the competency standards, in February 2020, Department of Pharmacy, SGH, was awarded the Learning Technology Adoption Grant (SkillsFuture Singapore) to develop "***Project VRx***", a high-fidelity VR Pharmacy Dispensing simulation training program to equip pharmacy staff and trainees with knowledge and skills to **process the prescriptions and medication orders** safely and accurately.

METHODS

Between February and December 2020, pharmacy collaborated with Serious Games Asia to develop and implement Project VRx (see project milestones in *Figure 1*). Pharmacy staff and trainees underwent a standardized 5-stage VR simulation training and assessment to complete the prescription processing activity *(see details in Figure 2)*. The simulation training took 1.5 – 2 hours to complete. The 5 stages are: Stage 1 – Validate prescription ➔ Stage 2 – Check medication orders ➔ Stages 3 & 4 – Perform calculations and check labels before packing ➔ Stage 5 – Pack and label medications. Feedback on the player's performance would be provided real-time throughout the simulation. The player's responses were assessed via a training dashboard. Trainers and trainees will be able to review the results and provide summative feedback.

The objective of the study is to evaluate users' perception of our VR simulation training tool. Upon completion of the training, participants completed a questionnaire consisting of 8 MCQs and open-ended feedback to evaluate their perception towards the use of VR for training and assessment of this pharmacy activity.
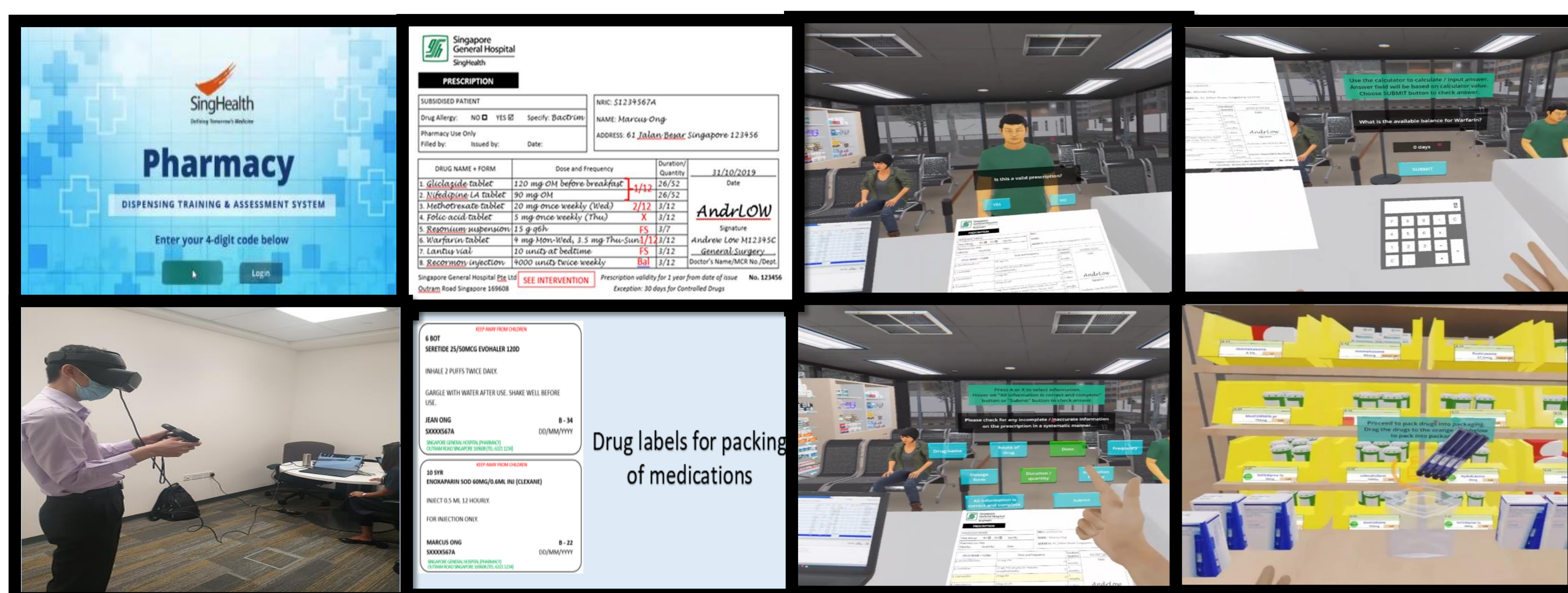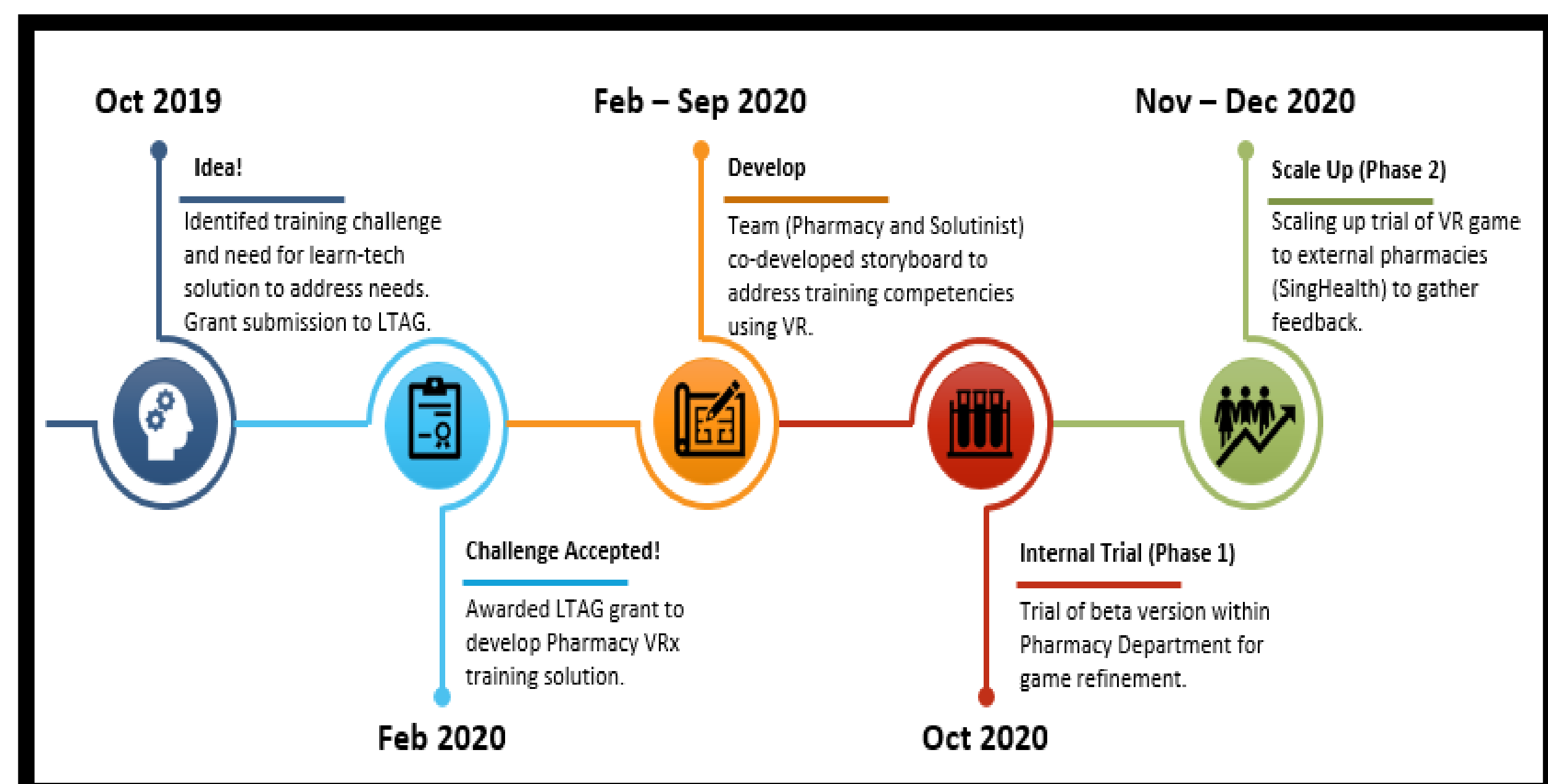

Figure 1. Project VRx milestones

Figure 2. Images from 5-stage Pharmacy Dispensing simulation training program

RESULTS

Twenty-five participants (12 pharmacists, 9 pharmacy technicians and 4 trainees) completed the training and questionnaire. Twenty-two (88%) participants are "slightly familiar" or "aware of VR and have used VR" prior to the simulation. They had to rate "Strong Disagree", "Disagree", "Neutral", "Agree" and "Strongly Agree" on their experience with VR simulation training (see *Figures 3a & 3b*) and its usefulness in training his/her knowledge and skills in processing prescriptions and medication orders using VR technology (see Figures *4a – 4c*).
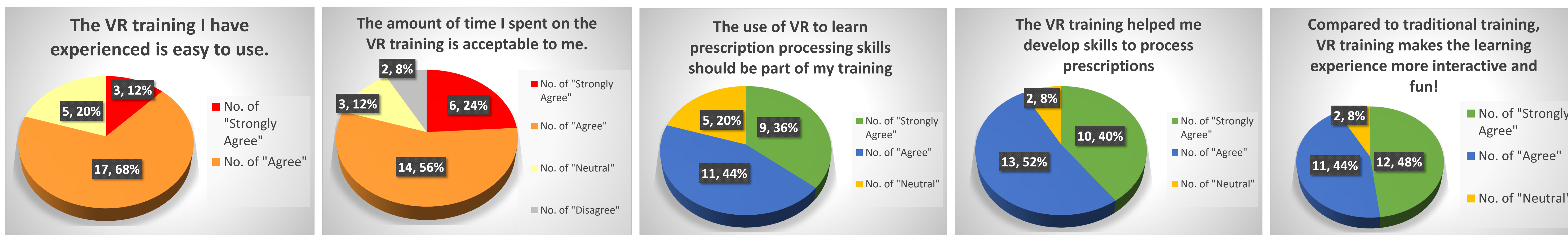
Figures 3a & 3b. User's experience with VR simulation training

Figures 4a - c. User's perception of usefulness of VR simulation for training of processing prescriptions

Participants provided qualitative input on the strengths of using VR technology for pharmacy training. The top 3 strengths of using VR for training were (i) safe and realistic simulation of real-life scenarios environment allowed learners to practice without risk of patient harm; (ii) accurate and real-time feedback given during the training and (iii) potentially reduce trainers' man-hours.

CONCLUSION

The study suggests that VR has a role in training and assessing skills including processing of prescriptions and medication orders. Overall, participants found VR simulation environment safe, realistic, engaging and interactive to acquire proficiency in the process of dispensing medication.

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