

### BACKGROUND

- Pharmacy schools have opportunities to utilize social media platforms as tools to aid in students learning and clinical knowledge
- A few medical schools and medical fellowship programs have utilized WhatsApp for discussion on cases, information sharing, and daily questions<sup>1,2,3</sup>
- WhatsApp is an internet based messaging system that is free to use and compatible on Android, iPhone, Mac, Windows PC, or Windows phone
- WhatsApp can accommodate group chats of up to 256 people

### OBJECTIVES

- To assess student participation in a clinical question of the day
- To assess student confidence levels in different pharmacy topics after discussion
- To improve students' clinical knowledge through daily discussion
- To find areas of improvement for the discussion platform

### METHODS

#### Study Design

- Descriptive, quantitative, survey study
- Study was a rolling enrollment and took place during Advanced Pharmacy Practice Experience (APPE) clinical rotations for 20 weeks from June 2020 to November 2020

#### Inclusion Criteria

- Southern Illinois University Edwardsville (SIUE) fourth year pharmacy students actively enrolled in (APPE) and SIUE third year students enrolled in the infectious disease elective or acute care elective
- Students who consented to be a part of the Institutional Review Board (IRB) approved research

#### Pre-survey

- 8 question pre-survey was sent which included a link to the discussion platform at the end of the survey
- The survey assessed the students demographic information, students' clinical confidence in different pharmacy specialty areas, confidence in using a group app format, question topics students wanted to be asked, and a North American Pharmacist Licensure Examination (NAPLEX) preparation assessment

#### Post-survey

- 12 question post-survey
- The post-survey was sent after the discussion in WhatsApp
- It assessed student demographic information, students' clinical confidence in different specialty areas, confidence in using a group app format, NAPLEX preparation assessment, learning assessment, and opinion on using a messaging system as a learning environment
- Using open ended responses students were instructed to write a new thing they learned, favorite and least favorite questions, and advice to improve discussion

#### Discussion Format

- Utilized WhatsApp group chat platform with group name "The Daily Dose"
- Students joined the Daily Dose anytime from June through September
- One question was sent daily Monday through Thursday in the morning
- All questions were asked by a single preceptor study investigator
- Moderators prompted for responses if no responses were received in the day

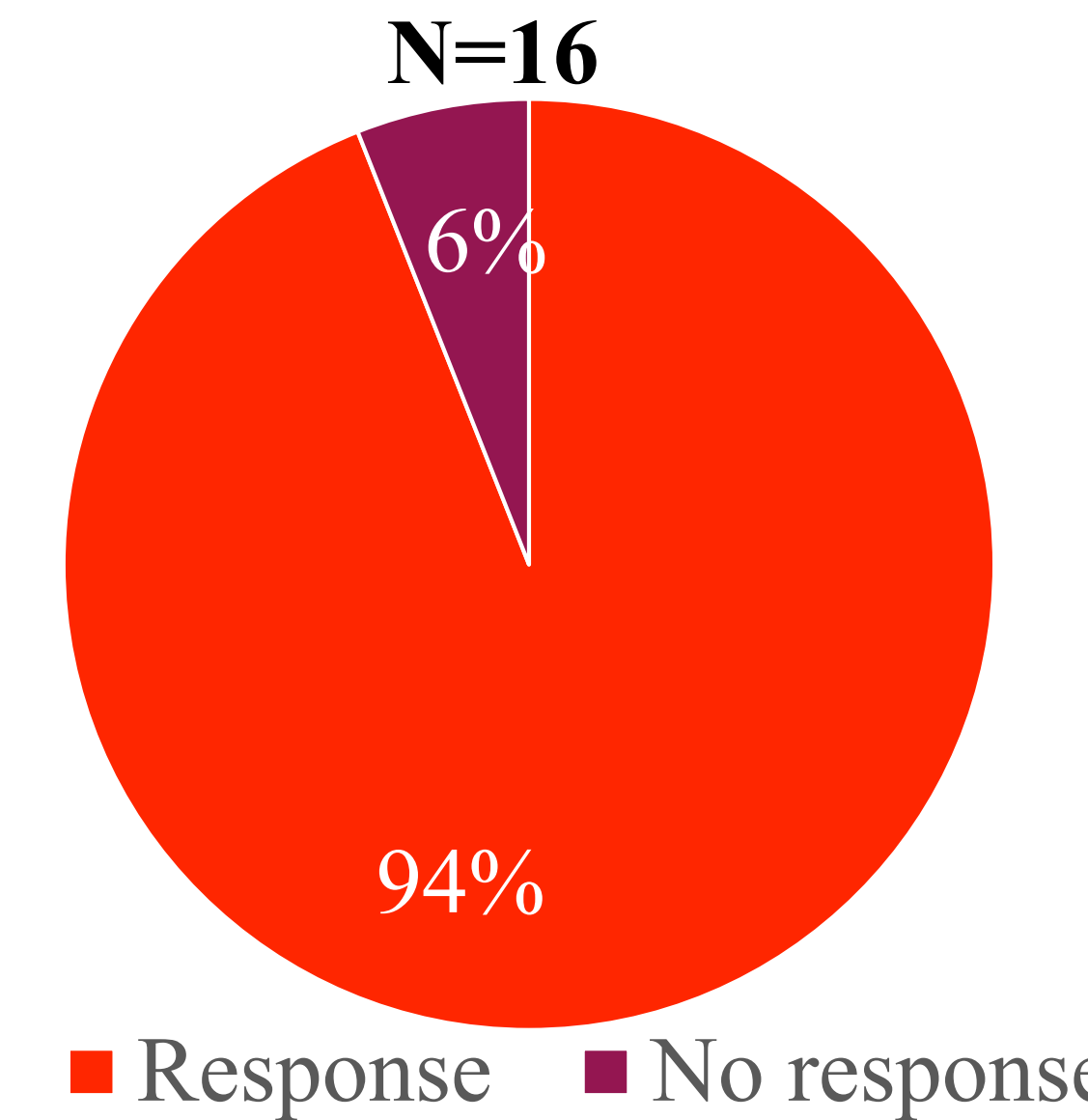
#### Data Analysis

- Descriptive statistics were used including means and percentages to describe the sample population

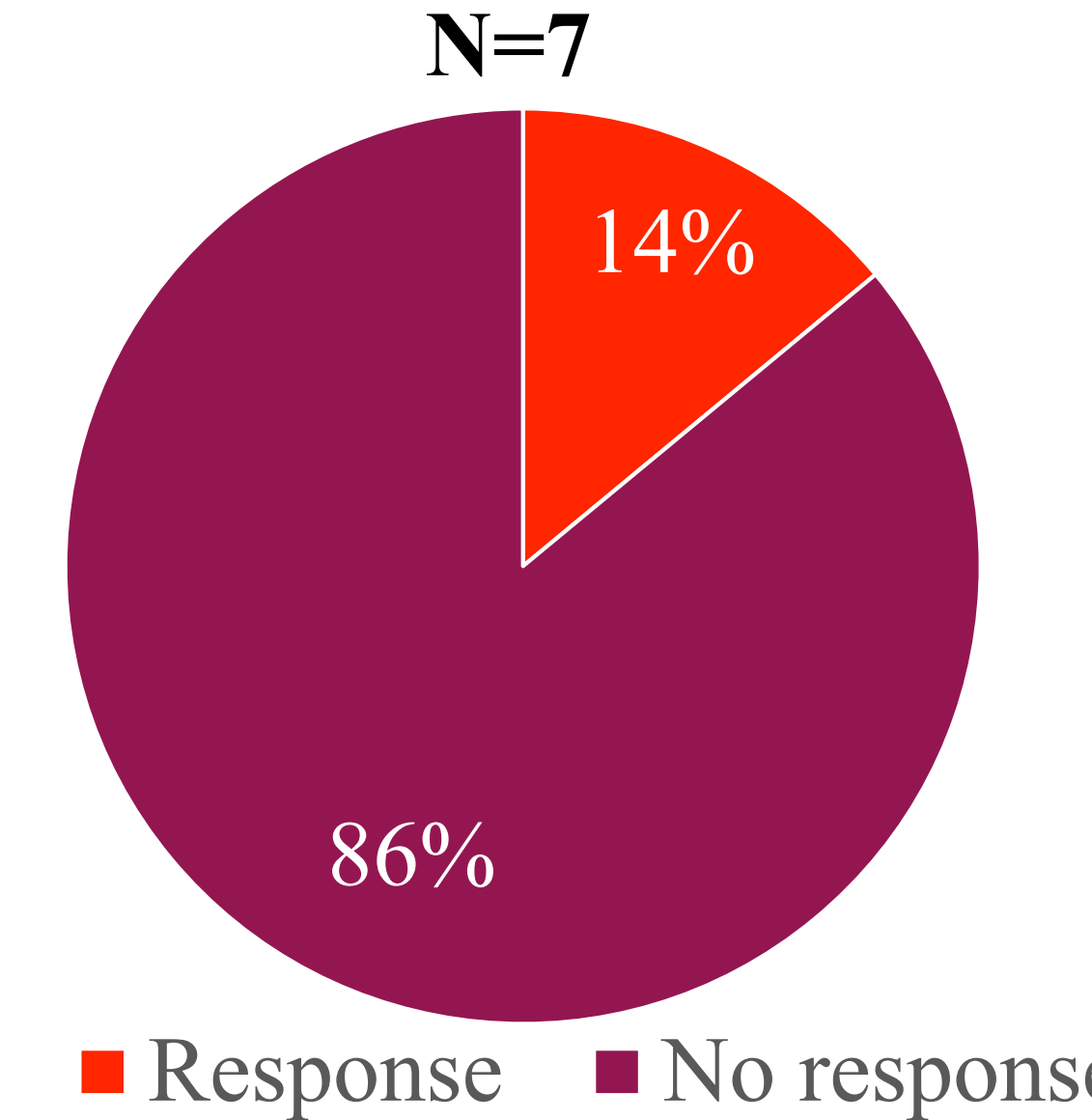
### RESULTS

- 73 questions sent throughout the study period with a 97% response rate
- 23 students joined the discussion and 70% responded to at least 1 question
- A moderator prompted for a first response from participants at a rate of 22%

**Figure 1: Fourth year students that responded to at least 1 question.**



**Figure 2: Third year students that responded to at least 1 question.**



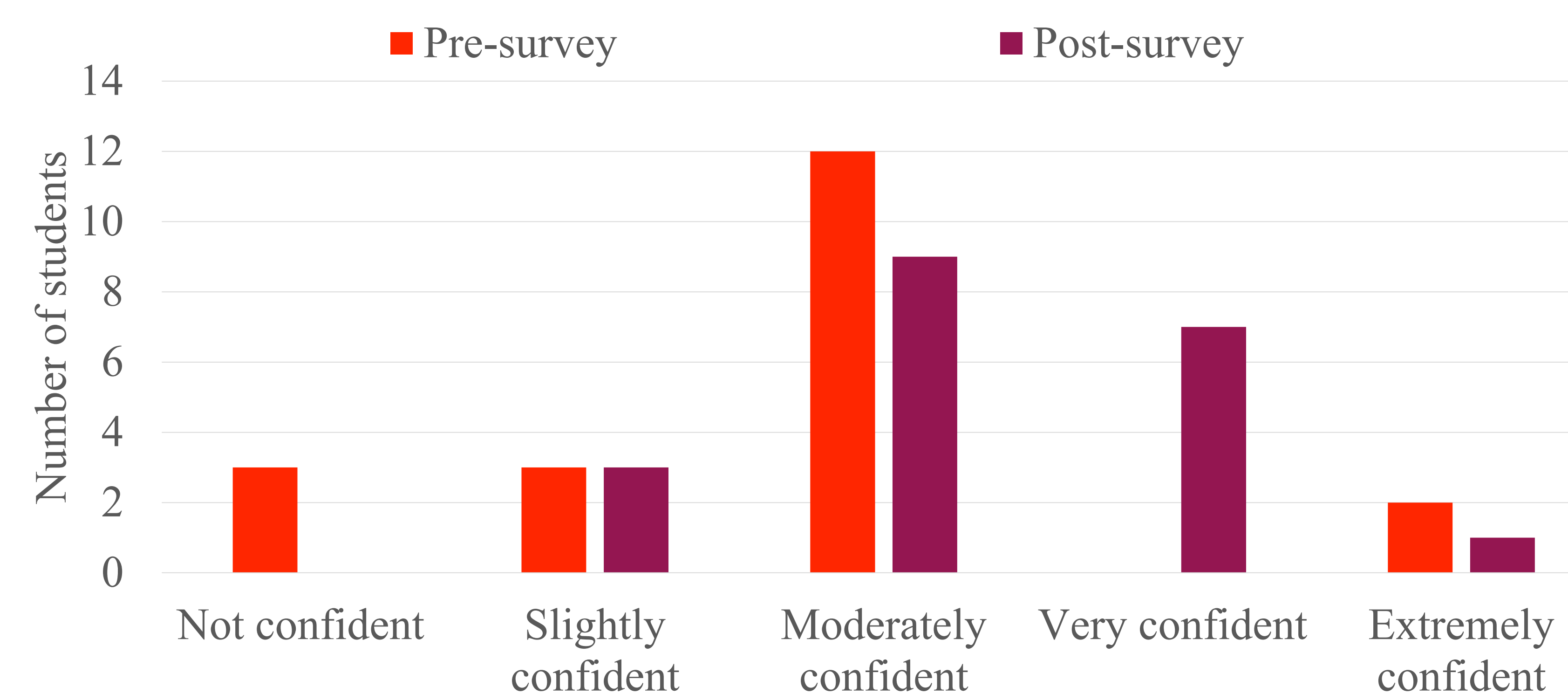
**Table 1: Student pre-survey and post-survey confidence levels.**

KEY: 0= Not confident at all, 1= Slightly confident, 2= Moderately confident, 3=Very confident, 4= Extremely confident

Number of questions asked in the daily dose discussion per category is listed next to the category (N)

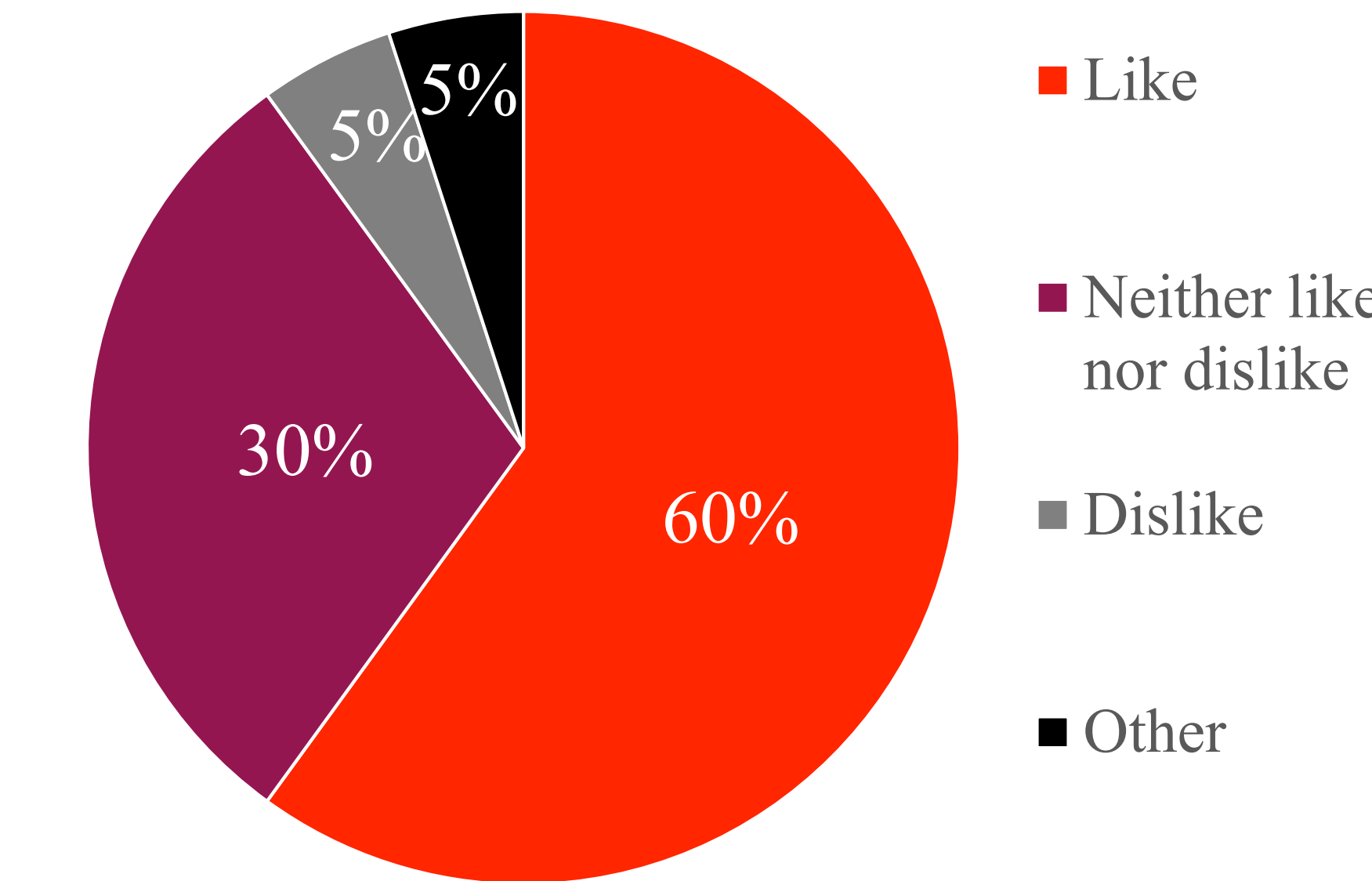
|                               | Pre-survey N=20, N (%): |                |                |                |              | Post-survey N=20, N (%): |               |               |                |              |
|-------------------------------|-------------------------|----------------|----------------|----------------|--------------|--------------------------|---------------|---------------|----------------|--------------|
|                               | 0                       | 1              | 2              | 3              | 4            | 0                        | 1             | 2             | 3              | 4            |
| Cardiovascular (10)           | 0 (0)                   | 3 (15)         | 12 (60)        | 5 (25)         | 0 (0)        | 0 (0)                    | 1 (5)         | 11 (55)       | 7 (35)         | 1 (5)        |
| Infectious Disease (13)       | 2 (10)                  | 2 (10)         | 10 (50)        | 4 (20)         | 2 (10)       | 0 (0)                    | 3 (15)        | 8 (40)        | 6 (30)         | 3 (15)       |
| Internal Medicine (62)        | 2 (10)                  | 4 (20)         | 10 (50)        | 4 (20)         | 0 (0)        | 0 (0)                    | 2 (10)        | 8 (40)        | 9 (45)         | 1 (5)        |
| Pain and Palliative Care (11) | 0 (0)                   | 8 (40)         | 11 (55)        | 1 (5)          | 0 (0)        | 0 (0)                    | 3 (16)        | 11 (58)       | 5 (26)         | 0 (0)        |
| <b>Total:</b>                 | <b>4 (5)</b>            | <b>17 (21)</b> | <b>43 (54)</b> | <b>14 (18)</b> | <b>2 (3)</b> | <b>0 (0)</b>             | <b>9 (11)</b> | <b>3 (48)</b> | <b>27 (34)</b> | <b>5 (6)</b> |

**Figure 3: How confident students feel answering questions in a group app format before and after discussion N=20**

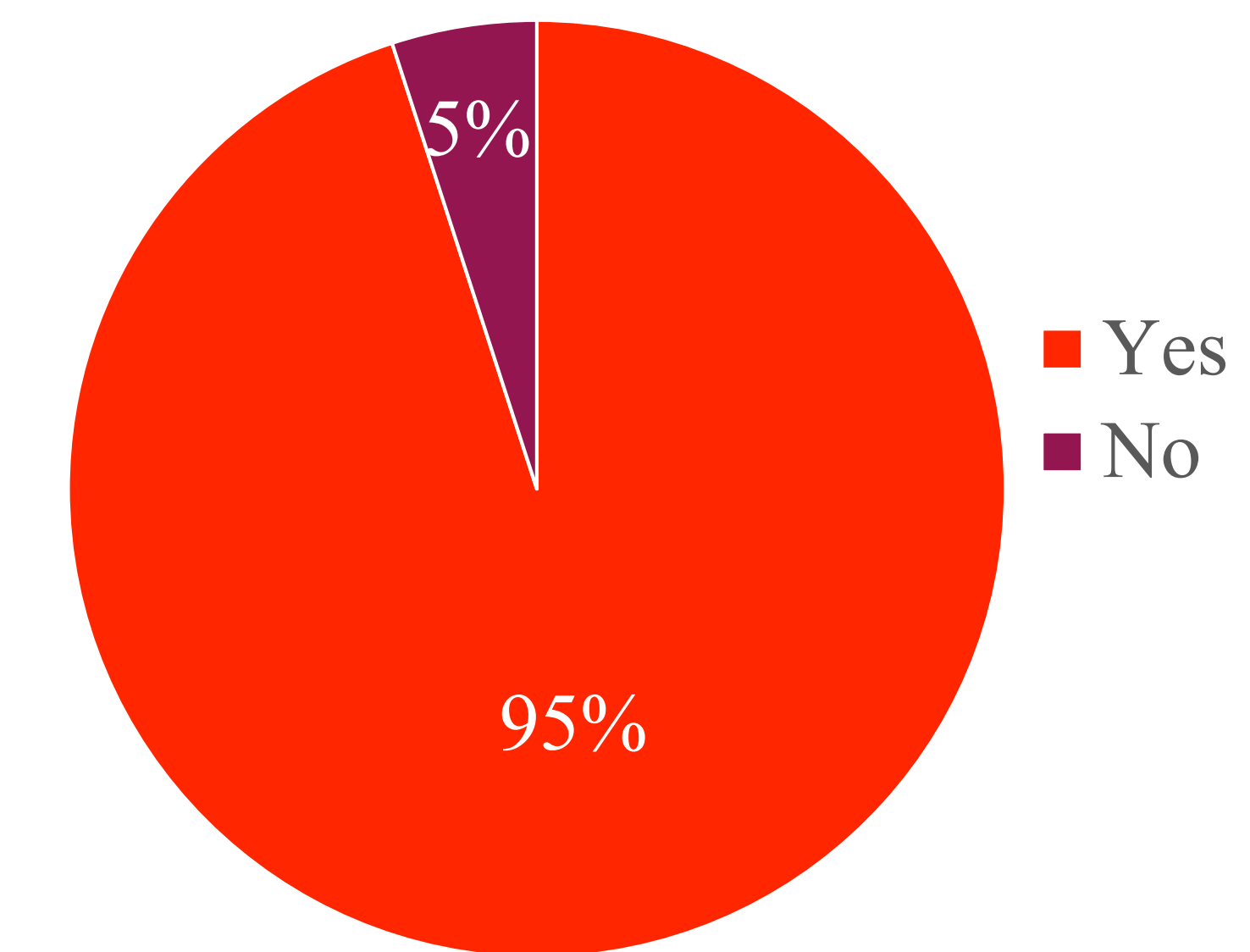


### RESULTS

**Figure 4: What is your opinion on using a messaging system like WhatsApp as a learning environment? N=20**



**Figure 5: Did you learn anything new from the discussion? N=20**



#### Students reported favorite questions:

- Patient clinical cases, clinical questions, controversial though provoking questions, questions that students felt confident/strong in, infectious disease, cardiovascular, personal questions, questions that could be answered with a short phrase, side effects and drug initiation questions, favorite resources, ambulatory care based questions, drug information review, patient education and medication adherence, career questions

#### Student reported least favorite questions:

- Antibiotic stewardship, oncology, insurance policy questions, biostatistics, drug information questions, questions that could not be answered with a short phrase, "easy questions that you could look up", non-clinical or pharmacology questions

#### Student Suggestions for improvement:

- Implement a system where multiple students can respond
- Have questions that are debate style so one can support and defend answers to promote more discussion
- Reduce questions per week
- Add in multiple choice questions throughout, add questions similar to NAPLEX (multiple choice) then have students defend their chosen answer
- Add more calculation questions
- Have questions asked at same time every day to give full 24 hours to answer
- Form teams and a point incentive to promote more responses and interaction
- Poll students weekly for a topic
- Poor timing, fourth year students on rotation are busy

### CONCLUSIONS

- Most students participated and learned new information. Some students answered questions more completely which may have impacted other responses.
- Majority of responders were fourth year students. Although third year students acted mostly as observers, they reported in the post-survey they had benefited from the fourth year students' discussion.
- Students' confidence in different pharmacy topics increased in areas that were frequently discussed
- WhatsApp could be a beneficial tool for multiple pharmacy learners

#### References:

- Latif, M. Z., Hussain, I., Saeed, R., et al. (2019). Use of Smart Phones and Social Media in Medical Education: Trends, Advantages, Challenges and Barriers. *Acta Informatica Medica: AIM: journal of the Society for Medical Informatics of Bosnia & Herzegovina: casopis Društva za medicinsku informatiku BiH*, 27(2), 133-138. <https://doi.org/10.5455/aim.2019.27.133-138>
- Goyal, A., Tanveer, N., & Sharma, P. (2017). WhatsApp for Teaching Pathology Postgraduates: A Pilot Study. *Journal of pathology informatics*, 8, 6. <https://doi.org/10.4103/2153-3539.201111>
- Jhaveri, K. D., Pascarelli, B., Hasan, A., et al. (2019). "WhatsApp"ening in nephrology training. *Clinical kidney journal*, 13(1), 813. <https://doi.org/10.1093/ckj/shz045>