Using simulation as an education modality to improve the way healthcare professionals are taught to manage adverse reactions to systemic anti-cancer therapy (SACT)

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Background

Most anticancer treatments carry a risk for adverse reactions to systemic anti-cancer therapy - SACT. These include infusion reactions caused by allergic reactions to foreign proteins, immunoglobulin E (IgE) mediated allergic reactions or non-immune mediated reactions (Vogel, 2010). Infusion reactions are generally mild with symptoms such as nausea, skin rash, puritis, chills, fever and headache etc (Baroso et al. 2024). New staff can feel overwhelmed dealing with this type of adverse event. Current training in managing these events in this cancer centre involves classroom teaching and written scenarios. Simulation provides a safe environment for learners to analyse and respond to realistic situations with the aim of developing or enhancing their knowledge, skills and behaviour (Hawker et al. 2022). There is limited evidence of the optimal training of qualified healthcare professionals and this aspect of SACT education. Therefore, this study aimed to compare simulation-based education and standard classroom-based education in new SACT nurses' knowledge and confidence in managing SACT related reactions.

Method

Comparative study of simulation-based education and standard education in managing SACT related infusion reactions

Phase 1
Standard (Std) education including presentation, written scenarios and discussion
One group of new SACT nurses
February 2024

Phase 2
Standard education with the addition of standardised patient simulation (Sim)
Second group of new SACT nurses
July 2024

- Pre and post confidence measured using 1-5- point Likert scale
- Knowledge questionnaires completed before and 1 week after education (scored 0-25 max 25)
- Student satisfaction and an adapted confidence in learning self – evaluation scale (SES) was distributed after both sessions. SES score ranged 0–56, higher score = greater confidence in learning
- Data was ordinal and described as median
- Open text feedback was provided after both sessions in answer to the questions:
  "What did you learn from the session?"
  "How could this session be improved?"

Results

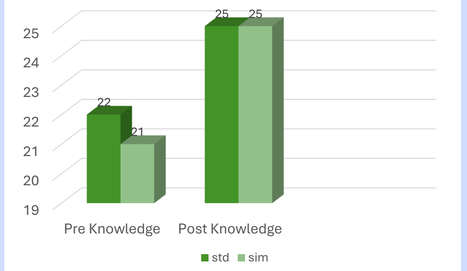
Education	Std Education n = 7	Sim Education n = 7
Age range (years)	25-41	20-25
Gender Female : Male	6:1	6:1
Exp in months (median)	3	2

- In total 7 nurses were recruited to both std and sim education
- Table 1 show STD Education and Sim education were similar in gender proportions both : 6 females :1 male
- Experience in SACT ranged 1 – 5 months in Std education
- Experience in SACT ranged 1-3 months in Sim education

Fig. 1 Median Pre and Post Confidence Scores

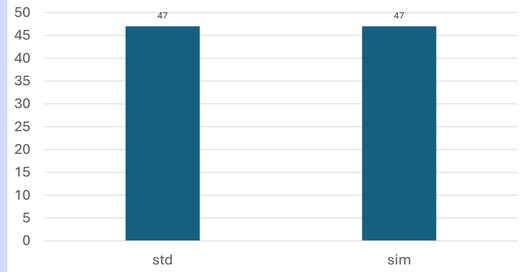
- Fig 1. shows Std Education: Median confidence increased from 2 to 4 and SIM Education increased from 3 to 4
- Confidence in both groups improved similarly

Fig. 2 Median Pre and Post Knowledge Scores



- Fig. 2 shows: Median Knowledge increased from 22 to 25 in Std Education and 21 to 25 with Sim Education:
- Sim group had a slightly greater increase in knowledge
- Data suggests simulation education is not inferior to standard education and may be more effective

Fig. 3 Confidence in Learning Self Evaluation Scale (SES)



- Fig 3. shows Median SES for both groups was similar at 47
- Results suggest the participants were similarly happy with the training they received

Open Text Data Collected following Standard and Simulation Education

- Open text data suggests that participants from both the standard education and simulation education groups valued learning how to manage SACT related infusion reactions.
- Both groups commented that their confidence had increased following the education sessions.
- The standard education group expressed that practical based scenarios would make it a better learning experience.
- Participants from the simulation education group commented that the practical aspect helped to build confidence and suggested multiple scenarios in a clinical area would improve their learning experience
- The simulation education group expressed that they would like "multiple scenarios of varying acuity"

Standard Education

"After the session I am more confident in identifying when a patient may be experiencing a reaction and what to do when this is happening"

"Would like more scenarios, more sessions, more often!"

"Scenario based practical learning would make this a better learning experience"

"Would like to have more scenarios to get used to identifying reactions and how to grade them more confidently"

"Still have a lot of learning to do but feel more confident than previously "

Simulation Education

"Before this session I did not have any exposure to infusion related reactions but after this session I have much more confidence regarding what to do"

"The knowledge and the practical skills made me feel confident enough to handle hypersensitivity reactions"

"Being in the clinical area i.e on the unit with more facilities would make this better"

"Would be good to have multiple simulations of varying acuity"

"After the session I became confident handling the HSR scenarios with help from the team members"

Conclusion

- Quantitative data suggests a similar improvement in confidence for both groups.
- The simulation group had a slighter higher increase in knowledge.
- Confidence in Learning SES scores demonstrate students were similarly happy with their learning.
- The open text data was useful to the Education team as this will help inform planning of future SACT education and training.
- Going forward, the Education Team plans to use one of the SACT Day Case Units to deliver simulation-based education to make the scenarios more realistic for the learners.
- The new Velindre Cancer Centre currently being built will include a simulation education area which will help improve the way education and training is delivered.

References:
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