

Crossword puzzle. A new paradigm for interactive teaching

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Innovative techniques have been employed in medical education to make the process of learning interesting and interactive.^{1,2} Medical students are encouraged to take active part in these innovations. We used the crossword puzzle as an innovative teaching technique to stimulate students during the discussion session on the topic of neonatal jaundice. The use of crossword puzzle as an educational tool has been described in postgraduate learning.^{3,4} The aim of the study was to see the practicality of using the crossword puzzle as an interactive teaching method at the undergraduate level.

The study was carried out at the Special Care Baby Unit (SCBU), Royal Hospital (RH), Muscat, Sultanate of Oman. A structured teaching program is followed in the SCBU for both fifth and seventh year medical students with integrated sessions on common topics in neonatology and practical demonstration of clinical examination of the new born. Students rotate between the Sultan Qaboos University (the parent institute) and RH, Muscat. The complete annual academic schedule including the lectures, tutorial topics and seminar presentations are time tabled between the 2 institutions so that no overlap is observed and sessions are not duplicated. During one of the discussion session on the topic of neonatal jaundice at RH on 21st February 2004, the seventh year students (9 in number) were given the crossword puzzle (**Appendix 1**). A case of a 2-day-old infant with yellow discoloration of the skin was presented. The case was discussed with regards to possible etiology; important information to be gathered in the history, possible investigation and treatment modalities. A crossword related to the topic was given to the students to solve. Development of crossword was simple. No cryptic or symmetrical format was used, as this would have complicated the puzzle further. Ten minutes were given to them to complete the puzzle. The solutions were later discussed with the students. An informal feedback was taken from the students regarding the use of this innovative approach. All students were able to solve the puzzle. However, a variable response was noted. None of the students were able to solve the puzzle completely. All were unable to guess clue number 8, while the rest of the words were picked without difficulty. Students gave a positive feedback regarding the use of this technique.

The present study demonstrated the successful use of crossword puzzle in a small group teaching set up. It showed that using such exercise stimulated

and activated the interactive learning among the students, reflected by their positive attitude and response. We utilized the discussion on a common neonatal problem covering the different aspects of the neonatal jaundice including etiology, differential diagnosis, laboratory investigation, management approach, and complications. Although, we noted a promising response from students to the crossword puzzle, the limitation of this approach is its applicability mainly to the small group classroom-based teaching. Its feasibility on large group teaching and community-based teaching needs further evaluation. We used a simple crossword format. A similar approach of simple crossword puzzle was used by Habibian et al⁵ in assessing young students regarding the knowledge of orthodontics. A complex crossword design is another alternative. Ber⁶ had recently shown the use of such complex crossword puzzle, the comprehensive integrative puzzle (CIP), in students' assessment. The CIP described by him had a complex design with columns containing the clinical vignettes and the rows the diagnoses. But despite of the complexity, he found the approach practical and highly accepted by both teacher and students.

In conclusion, we observed a reasonably good response from final year medical students to crossword puzzle technique. It was well appreciated by the students. To make undergraduate teaching more interesting and interactive, future development of a web-based interactive facility for teachers and students using complex crossword puzzles is suggested.

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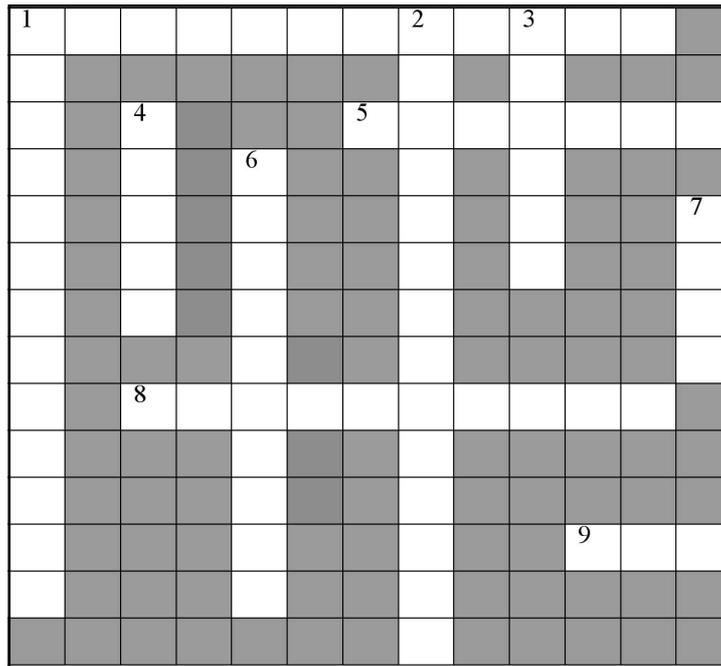
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Using crossword puzzle in teaching

Appendix 1 - Crossword puzzle related to neonatal jaundice.



Across

- 1 Treatment of unconjugated hyperbilirubinemia (12)
- 5 The other name for jaundice (7)
- 8 Mother to baby transfer causing hemolysis (10)
- 9 Important diagnostic investigation for jaundice (3-abbreviation)

Down

- 1 Most common cause of neonatal jaundice (13)
- 2 Neurological complication of neonatal jaundice (14)
- 3 Effect of excessive hemolysis (6)
- 4 Home therapy for neonatal jaundice (5)
- 6 It contains factors that may prolong neonatal jaundice (9)
- 7 Common genetic cause for jaundice in Oman (4-abbreviation)

Down

1 Physiological
2 Encephalopathy
3 Anemia
4 Light
6 Breast milk
7 G6PD

Across

1 Phototherapy
5 Icterus
8 Antibodies
9 LFT

Solutions to the crossword puzzle