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## RESEARCH ARTICLE

### PROBLEM-BASED LEARNING IMPROVE PROFESSIONAL LITERATURE COMPREHENSION OF CLINICAL PROFESSIONAL POSTGRADUATES ENROLLED IN THE STANDARDIZED RESIDENCY TRAINING

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#### ABSTRACT

**Background:** Since 2015, the clinical professional master was enrolled in the national standardized residency train system established formally in 2014 and in mainland China to improve the clinical skills and capacity of health care practitioner, but downfall of academic ability was found partly in these masters. **Methods:** The reading speed and accurate rate of professional literature comprehension of English reviews in neurogenic bladder between postgraduates of both groups, in which traditional instruction and problem-based learning (PBL) were respectively performed from day 1 to day 3, were compared at day 1 and day 4. **Results:** After courses of instruction, reading speed and accurate rate of professional literature comprehension of all postgraduates in two groups were enhanced significantly and respectively compared to before instruction, but more markedly improvement in the students of PBL groups compared to the control was detected. **Conclusions:** It is likely that the clinical professional master may yield more capacities of professional literature comprehension in English by PBL procedures compared to traditional instruction.

## INTRODUCTION

The national standardized residency train system was established firstly and formally in 2014 and in mainland China, which was led by the National Health and Family Planning Commission (NHPC) to improve the clinical skills and capacities of health care practitioner. By the end of 2014, no less than 55,000 resident physicians had been enrolled in the residency programs, which were made it for 3 years to comply with requirement, in 559 hospitals of thirty provinces except Tibet province (Lio et al. 2018). Since 2015, the medical master had been divided into academical master and clinical professional master, in which the latter was also enrolled within the national standardized residency training system. While the clinical management ability has been improved through the training system, to some extent decline has been detected in the academical research ability, including professional literature comprehension, manuscript writing and statistical analysis, of clinical professional master compared to previous medical master. Lack of academical research time due to heavy clinical burden, lower academic requirement compared to academic master and less accessibility of scientific research project may be contributed to the downfall of academic ability. Problem-based learning (PBL) was used to improve autonomous learning and practical skills by mean of solving problems and acquirement of knowledge through teacher-guided groups (Alduraibi et al. 2022).

In this study, we found that professional literature comprehension in English can be improved by PBL, which may enhance the ability of academic research of clinical professional master.

## METHODS

**Participants:** The study was performed with every year 1 postgraduates of urology at the second affiliated hospital of Guilin Medical University and the ShaoYang hospital affiliated to University of South China from Aug 2019 to Aug 2021. Before beginning study, ethical permission was obtained from the institutional ethics committee in 2019. The study had no exclusion criteria, a total of 2 first-year postgraduates in 2019, 4 in 2020 and 4 in 2021 received a 4-night experiment and those students was randomly assigned into two groups with a 1:1 ratio. The intervention group received PBL courses while the control group enrolled in traditional instructions. The participants including 10 males aged 22-25 years old.

**Design:** Before the courses of instruction, the reading speed and accurate rate of professional literature comprehension of a review in English of the neurogenic bladder in all postgraduates of two groups were evaluated as a baseline data. The control group received traditional lectures, including the epidemiology, anatomy, etiology, clinical features, diagnosis, differential diagnosis, treatments, and

prognosis of neurogenic bladder, in which traditional computerized teaching PowerPoint format edited in English was used and students listened and took notes, and the time spent in the group was ~60 min every course in three consecutive nights. The postgraduates of intervention group received PBL were required to retrieve reviews of the neurogenic bladder on website of pubmed in ~30min, and those students carried on intra-group discussion guided by problems raised by teachers, in which participants were encouraged to seek answers on the internet by English database, for example Medline, in ~30min in three consecutive nights. There were no differences between the PBL and control group in potential confounding variables including: the setting, time difference, audio/video assistance. After courses of instruction in all students of two groups, the reading speed and accurate rate of professional literature comprehension of another review in English of the neurogenic bladder were assessed again in day 4.

**Effectiveness assessment:** All statistical analyses were carried using SPSS version 27.0 software. The measurement data were expressed in the form of "x±s". Significance was assessed from t-test. Comparison of teaching effect between two groups.  $p < 0.05$  set as statistically significant.

## RESULTS

There were no significant differences of reading speed (113.2min±17.0 vs 114.8mn±13.5,  $p=0.855$ ) and accurate rate of professional literature comprehension (0.36±0.07 vs 0.37±0.07,  $p=0.779$ ) between two groups, respectively, before instructions (Table 1).

**Table 1. Comparison of reading speed and accurate rate of literature comprehension between two groups before instructions**

	Pre-instruction	Pre-instruction		
	Control (n=5)	PBL (n=5)	T value	p value
Reading speed	113.2min ±17.0	114.8 mn±13.5	19.5	0.855
Accurate rate	0.36 ±0.07	0.37±0.07	3	0.779

After courses of instruction, reading speed (113.2min±17.0 vs 85.6min±11.4 in control group,  $p=0.004$ ; 114.8min±13.5 vs 64.6min±4.3 in PBL group,  $p<0.001$ ) and accurate rate of professional literature comprehension (0.36±0.07 vs 0.63±0.05 in control group,  $p=0.002$ ; 0.37±0.07 vs 0.75±0.06in PBL group,  $p<0.001$ ) of all students in two groups were enhanced significantly and respectively compared to before instruction (Table 2-3), but more obviously improvement in the students of PBL groups compared to the control was found (Table 4).

**Table 2. Comparison of reading speed and accurate rate of literature comprehension between before and after instructions in postgraduates students of control group**

	Pre-instruction	Post-instruction		
	Control (n=5)	Control (n=5)	T value	p value
Reading speed	113.2min±17.0	85.6min±11.4	6	0.004
Accurate rate	0.36±0.07	0.63±0.05	7.5	0.002

**Table 3. Comparison of reading speed and accurate rate of literature comprehension between before and after instructions in postgraduates of PBL group**

	Pre-instruction	Post-instruction		
	PBL (n=5)	PBL(n=5)	T value	p value
Reading speed	114.8min±13.5	64.6min±4.3	11.1	<0.001
Accurate rate	0.37±0.07	0.75±0.06	4	<0.001

**Table 4. Comparison of reading speed and accurate rate of literature comprehension between two groups after instructions**

	Post-instruction	Post-instruction		
	Control(n=5)	PBL(n=5)	T value	p value
Reading speed	85.6min±11.4	64.6min±4.3	3.2	0.03
Accurate rate	0.63±0.05	0.75±0.06	4.14	0.014

## DISCUSSION

Standardized residency training system was established to improve the quality of general practitioners that corrected the weakness of the ability of ordinary medical institutions contributed partly to the difficulties in seeking qualified doctors and establishment of reasonable treatment protocols (Wang *et al.* 2020). The guidelines of the training has paid mostly attention to completion of clinical rotations of departments in hospitals, lists of diseases and procedures skills, and achievement of minimum requirements for numbers of cases, rather than the competencies in professionalism, communication and team cooperation spirit (Lio *et al.* 2018). Since clinical professional postgraduates was enrolled within the standardized residency training system in 2015, beside these problems mentioned above the decline of capacities in academic research gradually became more conspicuous (Hsu, Fu, and Chang 2020). Among competencies of academic research, the ability of professional literature comprehension in English has been regarded as a basic skill and mandatory for keeping pace with the development of specialized knowledges in the world. In PBL courses, problems are considered as the entry before learning process and students are required to play an important role in their own learning processes, while teachers can raise problems and answer questions generated by students during the procedure (Stentoft 2019). Previous researches haveproved that PBL enhanced the students' understanding, teamwork and critical thinking, and yielded higher satisfactory rate of students compared to traditional instruction procedures (Alduraibi *et al.* 2022; Jahangir and Inayat 2018; Stentoft 2019; Luo *et al.* 2021).

Little research has discussed the effectiveness of PBL in improvement of literature comprehension ability, which has been considered as a basic skill in academic research, in the clinical professional postgraduates enrolled in the standardization residency training system. In this study, the reading speed and accurate rate of professional literature comprehension in English in both postgraduates in two group, traditional instruction and PBL, were improved significantly compared to before instructions. However, higher effectiveness in enhancement of professional literature comprehension through PBL was detected compared to traditional process, which indicated PBL may improve the capacities of academic research through a limited time during standardization residency training, but more research needed in future due to defects in this research, including insufficiency of participants, limited research time, and only enrollment of postgraduates in urology. Initiative may play a key role in PBL procedures in this study, postgraduates retrieved subjectively reviews of neurogenic bladder on website of Pubmed to learn new professional words, epidemiology, etiology, pathophysiology, diagnosis, and treatments of neurogenic bladder in English. And then, students and teachers can discuss questions raised by instructor that enhanced assimilation of professional knowledges and academic skills of retrieving literature. Unsurprisingly, it is not uncommon that the postgraduates may yield more competencies in professional literature comprehension in English by PBL procedure compared to traditional instruction.

**Conflicts of Interest:** All authors have no conflicts of interest to declare.

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## REFERENCES

- Alduraibi, S. K., A. E. Sadik, A. Elzainy, A. Alsolai, and A. Alduraibi. 2022. 'Medical imaging in problem-based learning and impact on the students: A cross-sectional study', *J Pak Med Assoc*, 72: 1731-35.
- Hsu, P. W., R. H. Fu, and Y. C. Chang. 2020. 'Comparing learning outcomes among postgraduate year trainee groups', *Biomed J*, 43: 490-95.
- Jahangir, M., and F. Inayat. 2018. 'Implementation of Problem-Based Learning Method of Medical Education to Improve Trends in Undergraduate Medical Research in Pakistan', *J Coll Physicians Surg Pak*, 28: 894-95.
- Lio, J., Y. Ye, H. Dong, S. Reddy, J. McConville, and R. Sherer. 2018. 'Standardized residency training in China: the new internal medicine curriculum', *Perspect Med Educ*, 7: 50-53.
- Luo, P., W. Pang, Y. Wang, M. Liu, S. Zhou, S. Liu, X. Zhang, L. Liu, Y. Liu, and F. Zhou. 2021. 'WeChat as a Platform for Problem-Based Learning Among Hematological Postgraduates: Feasibility and Acceptability Study', *J Med Internet Res*, 23: e16463.
- Stentoft, D. 2019. 'Problem-based projects in medical education: extending PBL practices and broadening learning perspectives', *Adv Health Sci Educ Theory Pract*, 24: 959-69.
- Wang, H., J. He, D. Zhang, Y. Wu, P. Wang, and H. Cai. 2020. 'Investigation and analysis of standardized training for residents of general practitioners of Gansu Province in China', *BMC Fam Pract*, 21: 112.

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