PDCA circulation combined with continuing nursing guided by wechat on improving the nursing value of patients with gynecological inflammatory diseases during out-of-hospital treatment

Aijuan WANG[1], Nan LI[1]* ⓘD, Xue FAN[1]*

Abstract

To analyze value of PDCA circulation mode combined with continuing nursing guided by WeChat on improving the nursing quality of patients with gynecological inflammatory diseases during out-of-hospital treatment. 320 patients with gynecological inflammation were equally divided into control group (routine guidance during out-of-hospital treatment) and observation group (the control group implemented PDCA circulation mode combined with WeChat guidance of continuing care services). Nursing quality score and total nursing efficiency were compared. The patients' average age, marital status, menopause and disease types showed no difference between two groups. After 3 months of nursing intervention, the scores of nursing quality and total effective rate of nursing in the observation group were better than those in the control group. The improvement degree of mastery rate of gynecological health knowledge and the total nursing satisfaction in the observation group were better than those in the control group. During out-of-hospital treatment of patients with gynecological inflammatory diseases, the implementation of PDCA circulation mode combined with the continuous nursing intervention guided by WeChat is conducive on improving the quality of nursing, improving the grasp of gynecological health knowledge, thus increasing the satisfaction of patients with nursing services, with a high value of promotion and application.

Keywords: gynecological inflammation; PDCA circulation; WeChat guidance; continuing nursing; out-of-hospital treatment.

Practical Application: The application of PDCA circulation mode combined with WeChat guided continuing nursing service for patients with gynecological inflammatory diseases during out-of-hospital treatment can effectively improve the quality of nursing work, improve the grasp of gynecological health knowledge, and thus increase the satisfaction degree of patients with nursing service, which is worthy of clinical promotion.

1 Introduction

Gynecological inflammation refers to the inflammatory disease of the female reproductive system, which can occur in the vagina, cervix, pelvic cavity, endometrium and accessories, and is a common and frequently occurring gynecological disease (Mitchell et al., 2018). Gynecological inflammation has the clinical characteristics of severe disease, difficult to cure and easy to repeat, which can cause a variety of complications and seriously affect the physical and mental health of patients (Abdeyazdan et al., 2017). Due to the general lack of awareness of gynecological diseases, inadequate knowledge of self-care and health care, as well as a variety of bad living habits, the patients' physiological health is getting worse and worse, and gynecological inflammation is incurable for a long time, which causes great interference to daily life and work (Mohammed et al., 2017). At present, drug therapy is the main way to control the development of gynecological inflammatory diseases and improve symptoms and signs. However, most of the patients have poor compliance during out-of-hospital treatment, so they cannot take drugs in

strict accordance with the doctor's advice and correct their bad living habits. Therefore, continuous nursing intervention is often needed to ensure the treatment effect and improve the patients' self-care awareness and ability (Georgiadou et al., 2017). In this study, PDCA circulation combined with WeChat guided continuing nursing intervention was used to explore the nursing value of this model in the out-of-hospital treatment of gynecological inflammatory patients, as reported below.

2 Materials and methods

2.1 General data

The research project shall be submitted to the Ethics Committee for approval. The subjects included in this study were 320 patients with gynecological inflammation admitted to our hospital from January 2018 to June 2019. The clinical data of the patients were collected, and they were divided into the control group and the

---

Topic Relevance: This manuscript is relevant for Gynecological inflammation. The subjects included in this study were 320 patients with gynecological inflammation. Gynecological inflammation has the clinical characteristics of severe disease, difficult to cure and easy to repeat, which can cause a variety of complications and seriously affect the physical and mental health of patients. PDCA circulation combined with WeChat guided continuing nursing intervention was used to explore the nursing value of this model in the out-of-hospital treatment of gynecological inflammatory patients.

observation group by random number table method, 160 cases in each group. Inclusion criteria: age range between 18 and 60; It was confirmed by vaginal secretion examination, colposcopy examination, color doppler ultrasound, operation or pathology and met the diagnostic criteria of gynecological inflammation (Jakob et al., 2017). Language expression and communication skills, normal cognitive function; Heart, liver, lung, kidney and other major organs function normally; No history of venous thrombosis, psychiatric history or drug allergy; Voluntarily sign informed consent to cooperate with investigators. Exclusion criteria: under 18 years of age or over 60 years of age; Associated with nervous system, blood system and metabolic diseases; Malignant tumors and diseases of vital organs; Cognitive dysfunction or language dysfunction; Unable to cooperate with investigators. The general information of the two groups was shown in Table 1, and the difference between the two groups was not statistically significant or comparable (P>0.05).

2.2 Research method

After treatment, all patients were given targeted formal treatment programs according to the actual conditions. During out-of-hospital treatment, the control group was only given routine guidance, without special nursing intervention. The contents included: taking medicine as prescribed by the doctor, informing the patients of diet, sports and daily life matters needing attention, etc.; On the basis of the control group, the observation group implemented the continuous nursing service of PDCA circulation mode combined with WeChat guidance. Nurses and patients established contact through the WeChat platform to track the progress of out-of-hospital treatment of patients and give personalized guidance. Specific measures are as follows.

Plan: A nursing group was set up outside the hospital of gynecological inflammation, led by the head nurse of the department, and the team members were all the researchers involved. A senior nurse with more than 5 years of clinical experience was selected as the quality supervisor of nursing work. Through group meetings to discuss and clarify the specific nursing process and service content of gynecological inflammation outside the hospital; Organize team members to carry out intensive basic nursing training, so that they can have a deep understanding of PDCA circulation mode operation method, enhance the awareness of continuing nursing service, and improve nurses' knowledge of gynecological inflammation theory, psychological counseling ability and communication ability with patients, and to provide high-quality nursing services for patients treated outside the hospital.

Do: Since patients admitted to hospital, collect information such as the condition data and establish health files, understand the specific treatment and patient progress, through WeChat platform to push patients with gynecological inflammation mechanism, influence factors, treatment, care and attention such as knowledge, in order to improve the patients of department of gynaecology health knowledge rate; Evaluate the changes of psychological state of the patients during treatment, proactively inform them that adverse psychological conditions can lead to endocrine disorders and aggravate the condition, and use relevant psychological knowledge to guide them; Establish a good and trusting nurse-patient relationship, strengthen communication outside the hospital, patiently answer patients' doubts in plain language, and provide personalized nursing services and guidance for patients' problems during treatment; According to the actual treatment needs of patients to provide door-to-door follow-up services, guide patients to reasonable diet, exercise, develop good living habits, improve the body immunity and resistance.

Check: Nursing team supervisors regularly check the progress and implementation of out-of-hospital nursing, and further evaluate the feasibility and effectiveness of nursing contents on the premise of patients' condition and treatment.

Table 1. Comparative Analysis of General Data of Observation group and Control Group.

Project		Control group (n=160)	Observation group (n=160)	t/x^2	P
Mean age (years)		39.85 ± 7.22	40.03 ± 7.16	0.224	0.823
Marital status [n(%)]	Married	102 (63.75)	105 (65.62)	0.077	0.782
	Unmarried	58 (36.25)	55 (34.38)		
Menopausal status [n(%)]	Postmenopausal	26 (16.25)	29 (18.12)	0.123	0.726
	Premenopausal	134 (83.75)	131 (81.88)		
Mean duration of menopause (years)*		3.72 ± 1.16	3.84 ± 1.10	0.394	0.695
Disease types [n(%)]	Bacterial vaginitis	48 (30.00)	54 (33.75)	0.324	0.569
	Trichomonas vaginitis	47 (29.38)	44 (27.50)	0.087	0.768
	Colpitis mycotica	20 (12.50)	18 (11.25)	0.075	0.785
	Chronic cervicitis	18 (11.25)	17 (10.63)	0.020	0.888
	Chronic pelvic inflammation	15 (9.37)	14 (8.75)	0.023	0.879
	Senile vaginitis	12 (7.50)	13 (8.12)	0.027	0.870

Note: *Mean duration of menopause n is calculated by the number of cases of postmenopausal patients.

Action: Organize nursing group meetings regularly to discuss problems existing in nursing practice and adverse factors affecting the treatment effect of patients, formulate corresponding countermeasures based on the inspection results of supervisors, and continuously improve nursing plan and implementation; Encourage and support the implementation of the good aspects of nursing, appropriate punishment of the failure to implement the phenomenon, will improve the focus of nursing intervention into the next cycle, constantly solve the problem, adjust the nursing plan.

2.3 Evaluation index

(1) General data of patients were collected and summarized, and EXCEL data sheets were established, including average age, marital status, menopause, average duration of menopause, disease type, etc., for statistical comparison and analysis.

(2) The design scale evaluated the quality of the two groups of out-of-hospital nursing work respectively, and was scored by the nursing group supervisors after investigation, including service attitude, health education, psychological counseling, nursing implementation four aspects, each 25 points, the overall score of 100 points, the higher the score, the better the quality of nursing work.

(3) After 3 months of nursing intervention, the patient's clinical symptoms and signs disappeared completely, and the laboratory or imaging examination indicated no inflammation, that indicates cure. Symptoms and signs of partial disappearance or significant improvement of the condition, laboratory or imaging examination indicated that the lesion was reduced, that is, effective; Symptoms and signs are ineffective if they do not improve. Aggravation of symptoms and signs is a sign of deterioration. Total effective rate of clinical nursing = (cured cases + effective cases)/total cases ×100% (Ye, 2017).

(4) Before and after nursing, questionnaire survey and statistics were conducted on the mastery rate of gynecological health knowledge of the two groups of patients, mainly including the knowledge of gynecological inflammation and self-care knowledge. The full score of the questionnaire was 100, and the score ≥60 was considered as the basic mastery rate of relevant knowledge of the patients.

(5) To investigate the total satisfaction of patients with out-of-hospital nursing services, which can be divided into three grades: very satisfied, generally satisfied and dissatisfied. The sum of the two is the total satisfaction.

Statistical Analysis

Statistical software SPSS 20.0 was used to process and analyze the general data of patients and the study results. The enumeration data and the measurement data were expressed as rate (%) and mean ± standard deviation ('x±s), respectively, and were tested by x^2 and t. The differences were statistically significant: $P<0.05$.

3 Results

3.1 Comparative analysis of general data of enrolled patients

Among the 320 patients, 102 cases (31.88%) of bacterial vaginitis, 91 cases (28.44%) of trichomonas vaginitis, 38 cases (11.85%) of colpitis mycotica, 35 cases (10.94%) of chronic cervicitis, 29 cases (9.06%) of chronic pelvic inflammation and 25 cases (7.81%) of senile vaginitis were diagnosed. The mean age, marital status, menopausal status and disease types of patients in the observation group and the control group were compared and analyzed, and the differences between the groups were not statistically significant ($P>0.05$), indicating comparability. Data details are shown in Table 1.

3.2 Comparison of nursing quality scores between the two groups

After 3 months of out-of-hospital nursing intervention, all scores of nursing quality in the observation group were better than the control group, and the difference between the two groups was statistically significant ($P<0.05$). Data details are shown in Table 2.

3.3. Comparison of total effective rate of clinical nursing between the two groups

The total effective rate of clinical nursing in the observation group was higher than that in the control group, and the difference between the two groups was statistically significant ($x^2=12.269$, $P=0.001$). The data details are shown in Figure 1.

3.4 Comparison of mastery rate of gynecological health knowledge between the two groups

Before the implementation of nursing, the mastery rate of gynecological health knowledge in the two groups was generally low, and the difference between the two groups was not statistically significant ($P>0.05$). After nursing intervention, the mastery rate of the two groups was improved to different degrees, and the mastery rate of gynecological health knowledge in the observation group was higher than that in the control group, the difference was statistically significant ($P<0.05$). Data details are shown in Table 3.

Table 2. Comparison of Nursing Quality Score between Observation Group and Control Group (x±s, score).

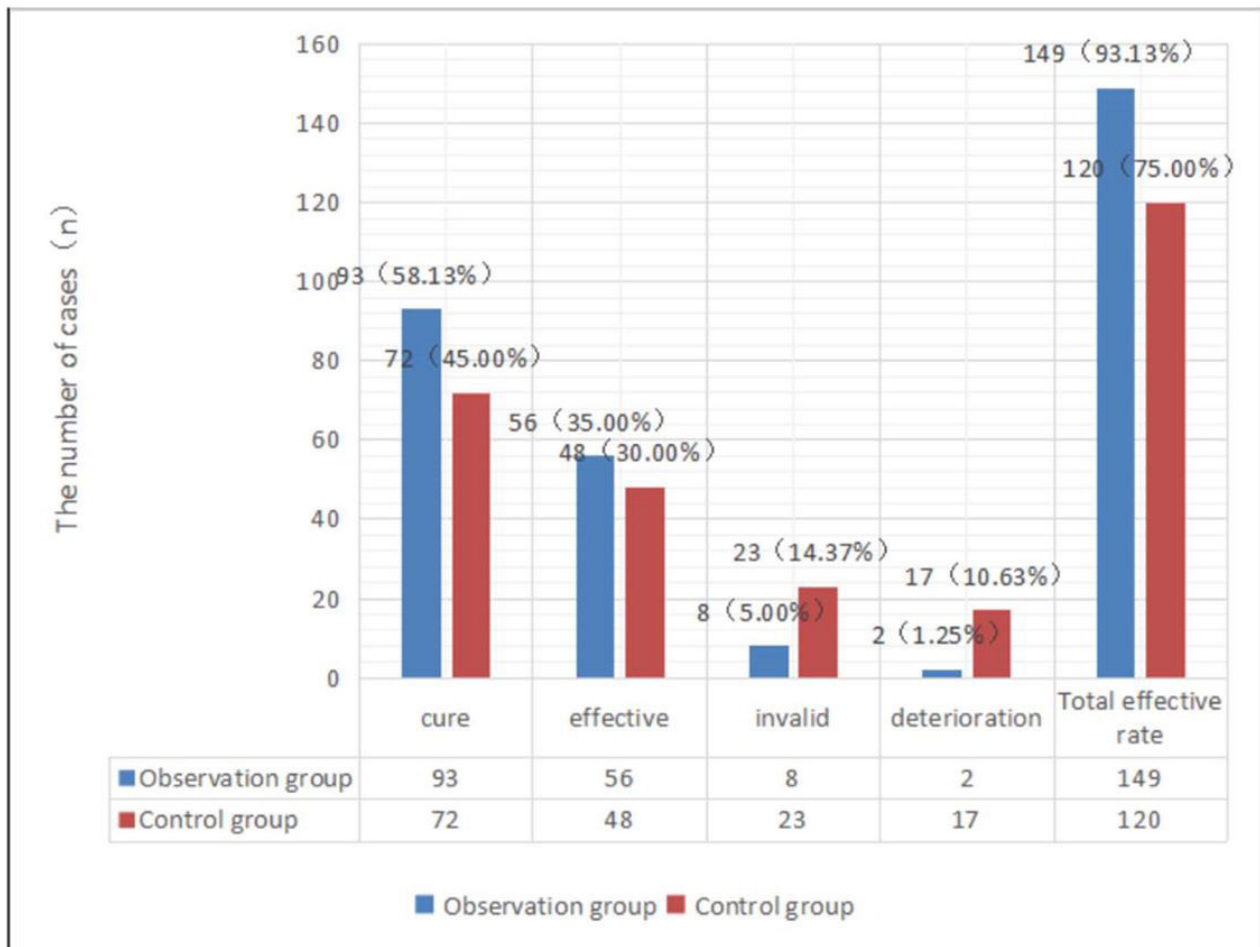| Group	Number of cases	Service attitude	Health education	Psychological counseling	Implementation of nursing	Overall score
Control group	160	19.24 ± 4.28	18.76 ± 4.52	19.02 ± 4.36	17.63 ± 4.19	74.23 ± 5.06
Observation group	160	22.75 ± 3.01	22.48 ± 2.97	23.14 ± 2.87	24.02 ± 0.98	92.88 ± 3.39
t		8.485	8.700	9.984	18.784	38.733
P		0.001	0.001	0.001	0.001	0.001

Figure 1. Comparison of Total Effective Rate of Clinical Nursing between Observation Group and Control Group.

3.5 Comparison of total nursing satisfaction between the two groups

The total satisfaction of patients in the observation group was higher than that in the control group, and the difference between the two groups was statistically significant (x^2=13.118, P=0.001). The data details are shown in Figure 2.

4 Discussion

In recent years, with the rapid development of China's economy and the continuous improvement of people's living standards, the dietary structure and environmental factors have also been changed, and the clinical incidence of various gynecological diseases has been increasing year by year (Seibæk et al., 2018). Common gynecological diseases mainly include gynecological inflammation, gynecological tumors, irregular menstruation, infertility, abortion, venereal diseases and gynecological plastic surgery, and each category contains a number of minor diseases; Among them, gynecological inflammation has the highest incidence, which can occur at various stages from teenagers to middle-aged and elderly (Chae et al., 2017). For gynecological inflammation is severe, difficult to cure and easy to relapse, medication or physical therapy has certain side effects, and

women generally lack adequate health care awareness, which is likely to cause serious impact on their physical and mental health (Zhao et al., 2017). Education and popularization of gynecological health knowledge, correct self-care and health guidance, and implementation of continuous nursing services aimed at patients who treated gynecological inflammation outside the hospital are of great significance to improve their disease cognition, self-care ability and drug efficacy (Xing et al., 2018).

PDCA circulation is a scientific, effective cycle work mode based on the four parts, which included plan, implementation, check and processing, applied to the clinical nursing service to achieve the continuous improvement of nursing work quality, on the premise of minimizing nursing labor intensity to provide patients with high quality nursing service (Gong et al., 2018). A large number of studies have shown that PDCA circulation mode can effectively improve the comfort level and nursing satisfaction of patients with a variety of diseases during hospitalization, and PDCA circulation nursing can better meet the physiological, psychological, social and humanistic needs of patients through planned and organized systematic management (Shi et al., 2017). In the study, this mode was combined with WeChat guidance, that is, a good nurse-patient relationship was established with the help of WeChat platform to further

Table 3. Comparison of Mastery Rate of Gynecological Health Knowledge between the Two Groups before and after Nursing [n(%)].

Group	Number of cases	Knowledge mastery rate of gynecological inflammation				Self - care knowledge mastery rate			
		Before nursing	After nursing	x^2	P	Before nursing	After nursing	x^2	P
Control group	160	92 (57.50)	98 (61.25)	0.292	0.589	87 (54.38)	96 (60.00)	0.645	0.422
Observation group	160	90 (56.25)	134 (83.75)	18.006	0.001	85 (53.12)	130 (81.25)	17.946	0.001
x^2		0.032	12.696	-	-	0.032	10.883	-	-
P		0.858	0.001	-	-	0.858	0.001	-	-
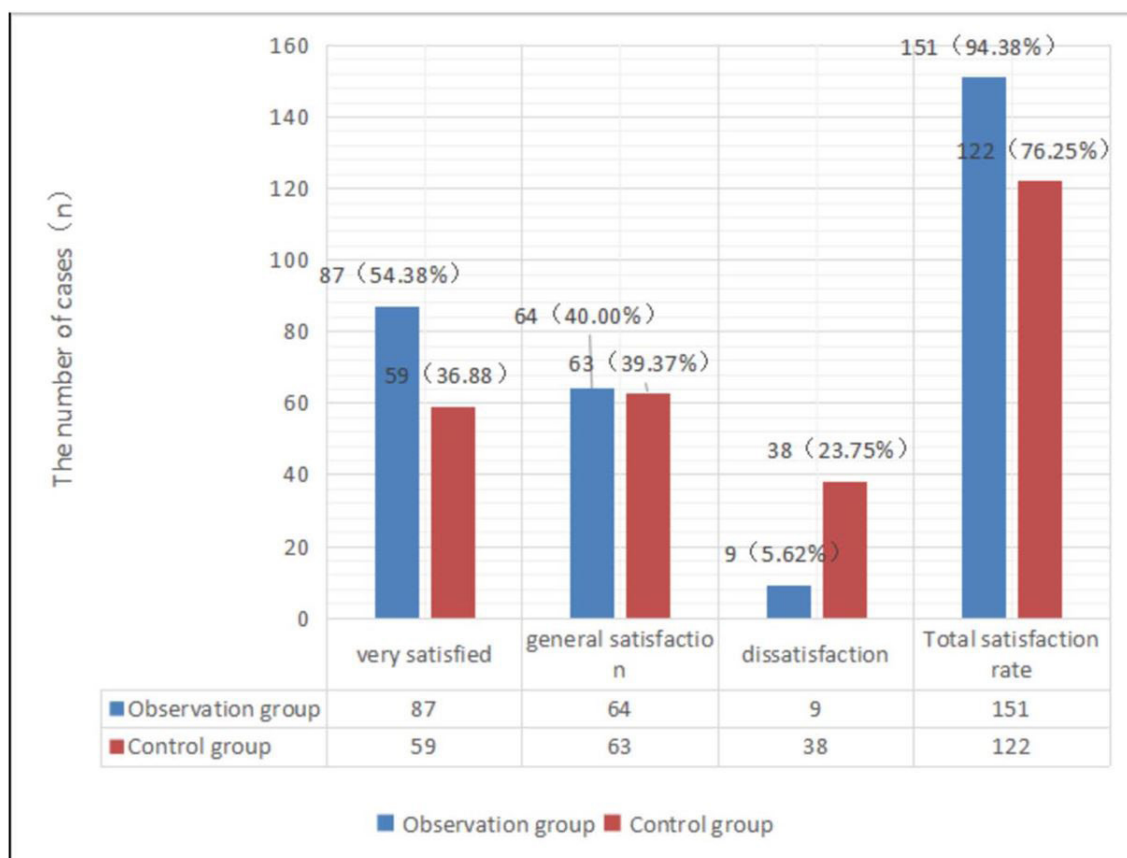
Figure 2. Comparison of Total Nursing Satisfaction between Observation Group and Control Group.

strengthen nurse-patient communication and exchanges. Patients with gynecological inflammation are usually treated with drug regimens to reduce the inflammatory response, improve clinical symptoms and control the disease. This process is relatively long and does not require hospitalization. Therefore, during the out-of-hospital treatment, it is necessary to strictly follow the doctor's advice to take drugs, at the same time, to correct the bad living habits, reasonable control of diet to regulate endocrine (Borrull-Guardeño et al., 2019; Hasanpour et al., 2017). PDCA circulation combined with the guidance of WeChat, that is, first of all, to clear the nursing process and content of out-of-hospital continuation, and develop a nursing plan in line with the treatment needs of patients. Secondly, nursing measures are implemented with the assistance of WeChat platform, including personalized health education, psychological counseling, dietary and life guidance. Then problems and deficiencies existing in

nursing practice are found out by regularly check of supervision personnel on the progress of nursing. At last, entering into the processing, propose solutions and countermeasures for the existing problems and deficiencies, and repeat the above four steps. Constantly find new problems, summarize new experience, so as to improve the nursing plan and measures, and ultimately to improve the quality of nursing service. Scholar He & Psychiatry (2017) and others applied PDCA circulation to clinical nursing of germ-related gastroesophageal reflux, and found that this model can effectively relieve anxiety and depression of patients, proving that PDCA circulation process is conducive to nurses to grasp the key points of nursing work, strengthen psychological intervention and obtain good results. Tang et al. (2017) and others discussed the effect of nursing intervention of PDCA circulation on medication compliance and pain symptoms of patients with gastrointestinal cancer in their study, and the results

showed that this model could significantly improve patient compliance and relieve clinical symptoms. The data results of this paper show that the implementation of PDCA circulation combined with the continuing nursing guided by WeChat during the out-of-hospital treatment of gynecological inflammatory patients can significantly improve the quality of nursing, nursing efficiency and patients' mastery rate of gynecological health knowledge. At the same time, the satisfaction degree of patients with nursing was increased, indicating that the nursing plan is conducive to promoting the continuous improvement of nursing service quality, and, to some extent, the improvement of patients' mastery rate of gynecological disease knowledge and self-nursing knowledge is beneficial to the improvement of treatment compliance.

In conclusion, the application of PDCA circulation mode combined with WeChat guided continuing nursing service for patients with gynecological inflammatory diseases during out-of-hospital treatment can effectively improve the quality of nursing work, improve the grasp of gynecological health knowledge, and thus increase the satisfaction degree of patients with nursing service, which is worthy of clinical promotion.

References

Borrull-Guardeño, J., Domínguez, A., Merizalde-Torres, M. H., & Sánchez-Martínez, V. (2019). Cervical cancer screening in women with severe mental disorders: An approach to the spanish context. *Cancer Nursing*, 42(4), E31-E35. http://dx.doi.org/10.1097/NCC.0000000000000608. PMid:29677009.

Chae, I. G., Yu, M. H., & Chun, K. S. (2017). Abstract 2317: Prostanoid EP4 receptor induces cleavage of HSP90 via ROS generation in human colon cancer cells. *Cancer Research*, 77, 2317-2317.

Georgiadou, E., Mcguinness, C., Siakas, K. V., Koukourakis, M., Repanovici, A., Khan, N., & Rahanu, H. (2017). The QUAIL Framework: quality assurance for information literacy projects. *International Journal of Human Capital and Information Technology Professionals*, 8(2), 93-105. http://dx.doi.org/10.4018/IJHCITP.2017040106.

Gong, P., Shi, B. W., Wang, J., Cao, P. X., Diao, Z. Y., Wang, Y. J., Hu, Y. L., & Li, S. P. (2018). Association between Th1/Th2 immune imbalance and obesity in women with or without polycystic ovary syndrome. *Gynecological Endocrinology*, 34(8), 1-6. http://dx.doi.org/10.1080/09513590.2018.1428301. PMid:29447491.

Hasanpour, M., Galehdar, N., Kazemi, A., & Zamani, A. (2017). Reminding the health team about what companions of the patients undergoing gynecological surgery should know: a qualitative study. *Iranian Journal of Nursing and Midwifery Research*, 22(5), 408-413. PMid:29033999.

He, M.M., & Psychiatry, D.O. (2017). Clinical effects of PDCA cycle-based nursing care in elderly gastroesophageal reflux disease patients with anxiety and depression. *World Chinese Journal of Digestology*, 25(7), 627.

Jakob, J., Cornuz, J., Auer, R., Jacot Sadowski, I., Cardinaux, R., & Selby, K. (2017). Design and user-testing of a decision aid comparing medications for smoking cessation. *Revue Medicale Suisse*, 13(566), 1191-1194. PMid:28640564.

Mitchell, O., Malatzky, C., Bourke, L., & Farmer, J. (2018). A modified Continuous Quality Improvement approach to improve culturally and socially inclusive care within rural health services. *The Australian Journal of Rural Health*, 26(3), 206-210. http://dx.doi.org/10.1111/ajr.12409. PMid:29573014.

Mohammed, H. A. S. (2017). Why continuous improvement programs fail in the egyptian manufacturing organizations? a research study of the evidence. *Social Science Electronic Publishing*, 7, 202-222.

Abdeyazdan, Z., Okhovat, F., & Namnabati, M. (2017). Effect of implementation of continuous care model on mothers' anxiety of the children discharged from the pediatric surgical unit. *Iranian Journal of Nursing and Midwifery Research*, 22(1), 37-40. http://dx.doi.org/10.4103/ijnmr.IJNMR_63_16. PMid:28382056.

Seibæk, L., Jakobsen, D. H., & Høgdall, C. (2018). The danish gynecological cancer nursing database: creating evidence for quality improvements in preoperative and postoperative cancer care. *International Journal of Gynecological Cancer*, 28(4), 802-807. http://dx.doi.org/10.1097/IGC.0000000000001220. PMid:29470187.

Shi, Z., Qin, Y., Zhu, Y., Pan, X., Zhou, X., Tan, Y., & Liu, Y. (2017). Commentary on effect of bronchoalveolar lavage with fiberoptic bronchoscopy combined with vibration sputum drainage on mechanically ventilated patients with severe pneumonia: a prospective randomized controlled trial in 286 patients. *Zhonghua Wei Zhong Bing Ji Jiu Yi Xue*, 29(1), 66-70. PMid:28459407.

Tang, F. P., Zhao, H. Y., & Fan, K. Y. (2017). Effect of PDCA intervention on compliance of patients receiving oral analgesic medication for gastrointestinal cancer pain. *World Chinese Journal of Digestology*, 25(17), 1591. http://dx.doi.org/10.11569/wcjd.v25.i17.1591.

Xing, H. L., Luo, Y. P., & Wang, S. Y. (2018). Effects of negative emotions and life events on women's missed miscarriage. *Iranian Journal of Public Health*, 47(2), 219-224. PMid:29445631.

Ye, X. Q. (2017). Application of fast-track surgical nursing care to laparoscopic surgery in patients with gynecological tumors: Nursing effects and impact on psychological fluctuations. *World Chinese Journal of Digestology*, 25(21), 1976-1979.

Zhao, F. Q., Xie, Z. H., Yang, Y. X., Li, N. N., Wang, X. Y., & Zhao, F. Q. (2017). Down-regulation of anti-apoptosis protein livin promotes HMR1275 (flavopiridol)-induced apoptosis of endometrial carcinoma cell line ishikawa. *International Journal of Clinical and Experimental Pathology*, 10, 1166-1171.