

Follow-up management strategy for patients undergoing peritoneal dialysis during novel coronavirus pneumonia epidemic

Y. WANG, Y.-C. WANG, S.-H. SONG, H.-X. ZHANG, L. WANG, X.-Q. MA, C.-P. ZHAO, M. XU, N. TIAN, M.-H. CHEN

Department of Nephrology Peritoneal Dialysis Center, General Hospital of Ningxia Medical University, Yinchuan, China; and Ningxia Kidney Disease Clinical Research Center, Yinchuan, China

Abstract. – OBJECTIVE: The study aimed to explore the best follow-up management strategy for patients undergoing peritoneal dialysis (PD) during the novel coronavirus pneumonia (NCP) epidemic.

PATIENTS AND METHODS: Patients undergoing PD who were followed up during the NCP epidemic by our hospital were enrolled in this study. Because of the need to control the epidemic, a follow-up system was established during the epidemic period, with WeChat, QQ, and the telephone as the main methods of communication. Outpatient and emergency follow-ups were carried out to ensure the safety of dialysis and the prevention and control of the epidemic. The follow-up strategy included response measures related to the epidemic situation, prevention of peritonitis related to PD, water and salt control, exercise guidance, and psychological care. According to the patient's condition, the appointment system was implemented, with one consulting room and one process for each patient. The emergency patients were isolated in accordance with the epidemic situation.

RESULTS: Since January 2020, among the 580 patients undergoing PD who were followed up in our department and their families, none had NCP infection. During the epidemic period, the standard hemoglobin level and the inpatient rate decreased. Complications related to PD, such as peritonitis, cardiovascular complications caused by volume overload, and pulmonary infection, did not significantly increase, and the withdrawal rate and mortality rate decreased compared with those in the same period last year.

CONCLUSIONS: The patient follow-up strategy during the epidemic period had a significant positive effect on preventing and controlling the epidemic. Furthermore, during the epidemic period, encouraging patients and caregivers to pay attention to protection at home, avoid going out, strengthen self-management, and other mea-

asures were beneficial to the control of kidney disease itself, which is worth promoting. The close relationship between doctors and patients during the epidemic had a positive effect on the occurrence of complications related to patients undergoing PD.

Key Words:

Novel coronavirus, Pneumonia, Peritoneal dialysis, Follow-up.

Introduction

Peritoneal dialysis (PD) is an effective renal replacement therapy for the long-term survival of patients with chronic renal failure¹⁻⁷. It has the advantages of simple operation, relatively low cost, high early survival rate, and better protection of residual renal function. After being trained by the nurses, patients can carry out dialysis and fluid change at home and have high autonomy. Therefore, PD is accepted by more and more uremic patients with end-stage renal disease. As a specific population, uremic patients have low resistance, are susceptible to coronavirus infections, and have high risks. As a home-based dialysis treatment mode, PD is not affected by restricted access, and the operator is the patient or a family member. Compared with hemodialysis, PD has certain advantages in epidemic situations and public emergencies. During the novel coronavirus pneumonia (NCP) epidemic, which began in December 2019, PD has demonstrated its unique advantages. During the NCP epidemic, timely adjustment of the follow-up management strategy of patients undergoing PD played a vital role in

preventing and controlling the epidemic situation. The specific strategies are summarized below.

Patients and Methods

Patients undergoing PD who were followed up by the PD center of Ningxia Medical University General Hospital during the NCP epidemic period (January 20, 2020, to March 20, 2020) were the subjects in this study. Relevant plans were formulated and implemented. These included an outpatient follow-up process and an emergency plan process.

The Follow-Up Process of Patients During the Epidemic

This process involved close contact with patients, mainly in the form of WeChat⁸, QQ, and telephone communication, to determine whether, due to the disease condition, the patient needed to make an appointment to go to the hospital for a follow-up.

If the patient's condition changed significantly, they should make an appointment by telephone in advance if they had to go to the hospital for further consultation.

According to the standard operating procedure, patients with PD should have a follow-up visit once a month⁹. However, in the epidemic stage, it is suggested that if the patient's condition is relatively stable, and there is no significant discomfort, they should not go to the hospital for further consultation. When the patient needs medication, one of the patient's healthy family members should go to the hospital to obtain that medication.

Process of patients' return visit to the hospital.

Before follow-up visits: evaluate the contact history of patients and family members by telephone and evaluate the epidemic situation of the patients' families and the surrounding areas; assess the epidemic prevention and control measures and road conditions of the community where the patient lives; inform the patients and their families of the risk prevention of home care under the epidemic situation; confirm the time for the patient to come to the hospital for further consultation; confirm the condition of the caregivers and the means of transportation. Patients and their families (caregivers) are guided to protect themselves and prepare certificates.

During follow-up visits: implement the workflow of one consulting room per person, and one person, one process. Allocate time for patients, and

reduce the number of patients in the diagnosis area, emphasizing the distance (1-2 meters) required between each person. Each patient will leave the diagnosis area immediately after the follow-up visit according to the process of "assessment-diagnosis-prescription-blood-collection-disposal". Patients with a specific condition will be handed over to the emergency department and the general resident doctor before the next patient's reception.

After follow-up visits: the nurse in charge collects the information regarding the patient's laboratory examination and condition evaluation, discusses the patient's condition with the PD physician, determines the specific treatment opinions for the patient, communicates with the patient by telephone, and ensures that the diagnosis and treatment information is complete and correct.

If the patient has a fever and other discomforts, carefully check the epidemic-related history, guide the patient to the fever clinic for treatment, and carry out follow-ups.

For patients who need to be hospitalized due to their illness, carry out examinations related to the epidemic situation, and make an appointment for hospitalization to go through the admission formalities as scheduled after the elimination of epidemic diseases.

Strengthening the Management and Health Education of Patients and Caregivers During the Epidemic

Strengthen the aseptic concept of patients and caregivers remotely – PD at home has higher requirements regarding the environment and personal hygiene of patients. These requirements include setting up a separate dialysis room if possible, paying attention to personal hygiene, washing hands carefully before and after the operation, wearing masks during the operation, and disinfecting the room. In addition, patients or caregivers are required to pay more attention to the aseptic concept in the fluid change operation. PD-associated infection is the main cause of failure and death¹⁰⁻¹⁴. During a large-scale epidemic, the patient's own resistance is poor. In the case of infection, the treatment is very difficult. Therefore, during the epidemic period, it is recommended that patients and their caregivers review the operation manual and related videos of home-based PD treatment, which should not be taken lightly. If necessary, videos are used for on-site judgment and processing.

Educate patients and caregivers to do a good job during home isolation; during the epidemic

period, we suggest that patients are isolated as much as possible and have no contact with the outside world, including their families, as family members who go out may act as intermediaries for infection. Therefore, we also included the caregivers' activities in the assessment of the disease, and we encouraged caregivers to minimize going out. In order to do a good job of personal protection, we suggested that people try not to go out. If they must go out, we encourage them to wear a mask and wash their hands carefully according to the seven-step hand-washing method when they get home.

Novel coronavirus (NCV) is transmitted by droplets and contact. The patient with PD should be isolated at home and cannot have fluke psychology, to cut off the route of transmission. If there is no significant change in the patient's condition, telemedicine such as WeChat, the telephone, QQ, and other methods can be utilized for communication instead of hospital follow-up. Oral medications can be purchased in the nearest pharmacy or from the Internet until the virus disappears.

When the patient is isolated at home, it is also necessary to open windows and ventilate on a regular basis every day. However, it is necessary to keep warm and prevent colds.

Strengthen nutrition support – diet management is an important measure to improve the nutritional status of dialysis patients^{15,16}. Patients undergoing PD may suffer from malnutrition due to the loss of protein and nutrients during dialysis. This may increase the risk of decreased resistance and opportunistic infection, which may affect the quality of life of patients undergoing dialysis¹⁷⁻²⁰. Therefore, it is necessary to ensure that patients have adequate nutrition intake every day. During dialysis, 10-15 g of protein is lost every day, especially when patients suffer from peritonitis, and therefore it is necessary to increase their protein intake. Consequently, it is recommended to add 0.8-1.2 g/kg of protein per day for patients with PD, of which more than 50% should be high-quality protein, including lean meat, eggs, milk, and bean products. It is recommended that the required daily calories should be 35 kcal/kg, in which fat accounts for 30-35% of the total calories. It is also necessary to add the necessary vitamins and adjust the diet plan according to the electrolyte level to avoid electrolyte disorders.

Attention should be paid to the principles of dietary balancing: the balance between coarse and fine textures, meat and vegetables, acid and alkaline foods, and hot and cold foods. It is also

necessary to pay attention to the balance between intake and discharge. The three aspects of dietary balancing are the balance between hunger and satiety, between movement and immobility, and between emotion and appetite. Four categories of food should be consumed daily: cereals and potatoes, vegetables and fruits, meat and eggs, and oils.

Control water and salt intake – during an epidemic, patients are isolated at home, and their activity is significantly reduced compared with what they would normally do. Furthermore, they are likely to be less physically active, and therefore sweating is reduced, and patients with oliguria or anuria are prone to volume overload. Long-term volume overload of the body is one of the major causes of deaths related to cardiovascular complications²¹⁻²³ and if not handled in time, it can lead to heart failure. Therefore, water and salt intake also require special attention during the epidemic period. Patients are guided to record their daily ultrafiltration volume and urine volume, based on the principle of “determining the intake according to the discharge” and reasonably plan their water intake according to the formula daily water intake = urine volume of the previous day + dialysis ultrafiltration volume + insensible water loss 500 ml. It is important to ensure that the water content of porridge, soup, milk, fruit, and other foods in the diet is not ignored. The intake of salt should be controlled below six grams per day and eating salted products should be avoided. Patients with edema and elevated blood pressure should strengthen the control of water and salt intake.

Ensure the adequacy of dialysis supplies such as the PD solution and iodophor cap – dialysis supplies, such as the PD solution and iodophor cap are the key factors to ensure the smooth operation of PD. However, in the current epidemic situation, there will inevitably be uncertainty. It is suggested that patients communicate with the medical staff of the designated hospital in a timely manner to ensure that dialysis supplies can be provided promptly to guarantee the smooth operation of PD.

Monitor vital signs and contact medical staff promptly – patients undergoing PD need to monitor their body temperature at least twice a day. If the patient has suspected NCV infection symptoms, such as fever, dry cough, fatigue, or even diarrhea, especially if they have been in direct or indirect contact with those who come from outbreaks areas, they should contact the medical staff promptly to get them to assess the disease. It is suggested that patients with mild symptoms undergo antivi-

ral isolation at home. In the case of high fever and dyspnea, the patient should be treated in the fever clinic of the local designated hospital in a timely manner with good protection. A routine blood test, a C-reactive protein test, and a lung computed tomography should be carried out.

Psychological nursing – uremia is a serious life-threatening disease caused by different chronic renal diseases^{24,25}. Its treatment is costly, which exerts great mental pressure on patients and families, and therefore patients are prone to burnout²⁶⁻²⁸. Young patients, in particular, may even contemplate suicide. Therefore, it is necessary to conduct timely psychological assessments during the follow-up of patients, during which the nurse in charge should communicate with the patients and determine the psychological dynamics of the patients and caregivers as soon as possible. Good family support has a direct protective effect on patients' physical and mental health²⁹. The mental health of the caregiver/family member will directly affect the treatment of the patient and thus directly affect the patient's mood. Therefore, the psychological care of caregivers is included in the follow-up management of patients undergoing PD. During an epidemic or emergency, there will always be a large range of news programs, and patients and their caregivers may be prone to panic. Therefore, nurses should communicate more with patients and caregivers, encourage patients to take care of themselves, send them timely scientific information related to the epidemic, and encourage patients to rest, maintain energy, stabilize their emotions, not panic, and trust the science and medical workers. Nurses should establish a "sense of hope" for patients and caregivers, enhance confidence, and reduce fear.

Results

During the epidemic, no NCP occurred in any patient or caregiver in our center. Peritonitis as-

sociated with PD only occurred in four patients (0.69%). Heart failure induced by volume overload occurred in only six patients (1.03%), and the quality of patient management was better than the national average³⁰.

Between January and March 2019, 548 patients with PD were re-examined in our department. Of these, 366 patients (66.79%) had hemoglobin levels of ≥ 110 g/L, and 305 patients (55.66%) had serum albumin levels of ≥ 35 g/L. Between January and March 2020, 462 patients were re-examined in our department. Of these, 230 patients (49.78%) had hemoglobin levels of ≥ 110 g/L, and 260 patients (56.27%) had serum albumin levels of ≥ 35 g/L. During the epidemic period, the standard hemoglobin level decreased significantly ($p < 0.001$), but the standard nutritional index serum albumin level did not decrease significantly (Table I).

In January, February, and March 2019, the number of patients with peritonitis in our department was five, five, and eight, respectively. In January, February, and March 2020, the number was four, four, and four, respectively. In addition, in January, February, and March 2019, the number of pulmonary infection cases was four, two, and eight, respectively. In January, February, and March 2020, the number was six, zero, and three, respectively. Furthermore, in January, February, and March 2019, the number of cardiovascular event cases was five, six, and eight, respectively. In January, February, and March 2020, the number was eight, three, and five, respectively. A comparison of results revealed that the prevalence of peritonitis, pulmonary infection, and cardiovascular events did not increase significantly. In January, February, and March 2019, the number of hospitalized patients was 18, 16, and 24, respectively. In January, February, and March 2020, the number was 16, 4, and 11, respectively (Table II).

Moreover, in January, February, and March 2019, the number of patients in our department who withdrew from the treatment was eight, five, and eight, respectively. In January, February, and

Table I. Comparison of standard-reaching rates of hemoglobin and serum albumin in PD patients during the epidemic period with the same period in 2019.

Item	2019 (n, %)	2020 (n, %)	χ^2	P
Hemoglobin	366 (66.79)	230 (49.78)	29.967	<0.001
≥ 110 g/L	305 (55.66)	260 (56.27)	0.039	0.843
Serum albumin				
≥ 35 g/L				

Table II. The incidence of PD-associated complications during the epidemic period compared with the same period last year (mean \pm SD).

Item	2019 (%)	2020 (%)	<i>P</i>
Peritonitis	1.09 \pm 0.31	0.69 \pm 0.01	0.018
Pulmonary infection	0.84 \pm 0.55	0.72 \pm 0.84	0.451
Cardiovascular event	1.15 \pm 0.28	0.93 \pm 0.44	0.476
Hospitalized patients	3.50 \pm 0.75	1.79 \pm 1.06	0.667

March 2020, the number was five, four, and seven, respectively. Furthermore, in January, February, and March 2019, the number of patients who died was seven, four, and six, respectively. In January, February, and March 2020, the number was three, four, and seven, respectively. A comparison of results revealed that there was no significant increase in withdrawal rate and mortality (Table III).

Discussion

Under the epidemic situation, how to better serve the uremic patients undergoing PD, prevent and control the infection of patients (and their families) undergoing PD, how to adjust and optimize the hospital medical process so that the clinical work can be carried out in a scientific and orderly manner, and how to minimize the impact of the epidemic on the treatment of patients undergoing PD have become key problems to be solved in clinical practice. Due to the long treatment time of patients undergoing PD at home and the limitations and particularity of home-based self-care, patients cannot obtain timely professional guidance, which is likely to lead to capacity overload³¹. During the outbreak of NCP, the unique advantages of the treatment mode of home-based PD were highlighted. However, due to the particularity of the disease, patients undergoing long-term home dialysis treatment are prone to paralysis, especially if there is poor compliance with water and salt control during long-term indoor activities, which leads to the occurrence of capacity overload. During the epidemic period, we strengthened the fol-

low-up management through telephone follow-up, close WeChat platform interaction, and patient education lectures on the push platform. We emphasized the epidemic-related precautions and points requiring attention in a timely manner, assessed the patients' dynamics, and urged them to closely observe any change in the condition and other measures. Consequently, there was no significant increase in the incidence of dialysis-related complications such as volume overload, PD-associated peritonitis, pulmonary infection, and cardiovascular events compared with the same period last year.

However, the standard hemoglobin level was lower than that during the same period last year, which may be related to the fact that patients could not go out to receive erythropoietin injections. Erythropoietin that can be taken orally has become a new demand direction for patients with renal anemia. The number of hospitalized patients was lower than that during the same period last year. The reason may be that during the NCP epidemic period, it was suggested that patients should undergo home-based treatment and avoid going out. During the period of home-based treatment, we strengthened the education of patients through the follow-up system, such as the network platform and telephone, and improved their self-management ability. As a result, the occurrence of complications was reduced, and the demand for hospitalization was suppressed.

Improvement in patients' effective follow-up management is needed to strengthen the self-protection awareness and self-management ability of patients undergoing PD and their caregivers. This study focused on the effective guidance of

Table III. Comparison of withdrawal rate of patients during the epidemic period and the same period last year (mean \pm SD).

Item	2019 (%)	2020 (%)	<i>P</i>
Withdrawal	1.27 \pm 0.32	0.92 \pm 0.26	0.567
Mortality	1.02 \pm 0.28	0.80 \pm 0.35	0.605

home-based emergency self-management of patients undergoing PD. It looked at the formulation of diagnosis and treatment processes during the epidemic, reasonable follow-up procedures, reduction of communication risk, and looking after mental health. Other areas focused on diet guidance, exercise guidance, good family and personal protection, and other specific issues to control NCP and improve the quality of life and prognosis of patients undergoing PD.

Conclusions

During the epidemic period, using WeChat, QQ, and the telephone as the main follow-up methods, and outpatient and emergency follow-ups as the auxiliary methods, had a significant effect on the disease control and infection prevention of patients undergoing PD. Through data analysis, we found that compared with the relevant indicators of patients in the same period last year, the standard rate of hemoglobin decreased. However, the standard rate of the nutritional index, such as the serum albumin level, did not decrease significantly. The prevalence of related complications, such as peritonitis, pulmonary infection, and cardiovascular events did not increase significantly. In addition, there was no significant increase in the number of hospitalized patients and the withdrawal rate and mortality. Therefore, the follow-up management strategy implemented during the NCP epidemic should be promoted. Moreover, the close relationship between doctors and patients during the epidemic had a positive effect on the occurrence of complications related to patients undergoing PD.

Conflict of Interest

The Authors declare that they have no conflict of interests.

Ethics Approval and Consent to Participate

I confirm that I have read the Editorial Policy pages. This study was conducted with approval from the Ethics Committee of the General Hospital of Ningxia Medical University. This study was conducted in accordance with the declaration of Helsinki. Written informed consent was obtained from all participants.

Funding

This work was supported by the National Key Research and Development Program of China (No. 2016YFD0400605).

References

- 1) ZENG JP, QIU ZZ, ZHANG HD, WU Y. Study on the value of applying WeChat follow-up management platform for peritoneal dialysis patients. *Capital Food and Medicine* 2018; 025: 45-46.
- 2) LI PK, CHOW KM, VAN DE LUIJTGAARDEN MW, JOHNSON DW, JAGER KJ, MEHROTRA R, NAICKER S, PECOITS-FILHO R, YU XQ, LAMEIRE N. Changes in the worldwide epidemiology of peritoneal dialysis. *Nat Rev Nephrol* 2017; 13: 90-103.
- 3) MEHROTRA R, DEVUYST O, DAVIES SJ, JOHNSON DW. The current state of peritoneal dialysis. *J Am Soc Nephrol* 2016; 27: 3238-3252.
- 4) MONCRIEF JW. The birth and development of continuous ambulatory peritoneal dialysis. *Contrib Nephrol* 2017; 189: 85-90.
- 5) BRIGGS V, DAVIES S, WILKIE M. International variations in peritoneal dialysis utilization and implications for practice. *Am J Kidney Dis* 2019; 74: 101-110.
- 6) PERL J, BARGMAN JM. Peritoneal dialysis: from bench to bedside and bedside to bench. *Am J Physiol Renal Physiol* 2016; 311: F999-F1004.
- 7) AO X, ZHONG Y, YU XH, MARSHALL MR, FENG T, NING JP, ZHOU QL. Acute peritoneal dialysis system for neonates with acute kidney injury requiring renal replacement therapy: a case series. *Perit Dial Int* 2018; 38(Suppl 2): S45-S52.
- 8) ZHANG HY, ZHAO J, SONG ML. Practice and effect of applying WeChat to carry out home continuous care service for peritoneal dialysis patients. *Int J Nurs* 2017; 36: 612-613, 620.
- 9) CHEN, XM. *Standard Operating Procedures for Peritoneal Dialysis (SOP)*. Edition. People's Army Medical Press, 2010.
- 10) WANG Y, ZHANG HX, MA XO, WANG YC, ZHAO C, WANG L, ZHANG L. Discussion on the influencing factors of peritoneal dialysis-associated peritonitis. *Journal of Ningxia Medical University* 2015; 37: 59-61.
- 11) BIEBER S, MEHROTRA R. Peritoneal dialysis access associated infections. *Adv Chronic Kidney Dis* 2019; 26: 23-29.
- 12) CHO Y, JOHNSON DW. Peritoneal dialysis-related peritonitis: towards improving evidence, practices, and outcomes. *Am J Kidney Dis* 2014; 64: 278-289.
- 13) CHAN YH, MA AL, TONG PC, LAI WM, TSE NK. Chronic peritoneal dialysis in Chinese infants and children younger than two years. *J Vasc Access* 2019; 20(1 Suppl): 31-34.
- 14) RIVACOBBA MC, CEBALLOS ML, CORIA P. Peritoneal dialysis-related infections in pediatric patients: diagnosis and treatment. *Rev Chilena Infectol* 2018; 35: 123-132.
- 15) YAO F, ZHANG L. Analysis of the causes of malnutrition and nursing progress in maintenance hemodialysis patients. *Maternal and Child World* 2019; 5: 297.
- 16) JOHANSSON L. Nutrition in older adults on peritoneal dialysis. *Perit Dial Int* 2015; 35: 655-658.
- 17) GÜNALAY S, ÖZTÜRK YK, AKAR H, MERGEN H. The relationship between malnutrition and quality of life

- in haemodialysis and peritoneal dialysis patients. *Rev Assoc Med Bras* 2018; 64: 845-852.
- 18) SALAMON KM, LAMBERT K. Oral nutritional supplementation in patients undergoing peritoneal dialysis: a randomised, crossover pilot study. *J Ren Care* 2018; 44: 73-81.
- 19) HAN SH, HAN DS. Nutrition in patients on peritoneal dialysis. *Nat Rev Nephrol* 2012; 8: 163-175.
- 20) TENNANKORE KK, BARGMAN JM. Nutrition and the kidney: recommendations for peritoneal dialysis. *Adv Chronic Kidney Dis* 2013; 20: 190-201.
- 21) CAO LN, WANG L, YE QL, LIANG MC, TAN C, YANG MY. Effect of education and follow-up of volume self-management on cardiac function in persistent ambulatory peritoneal dialysis patients. *Nursing Practice and Research* 2016; 13: 31-33.
- 22) SHU Y, LIU J, ZENG X, HONG HG, LI Y, ZHONG H, MA L, FU P. The effect of overhydration on mortality and technique failure among peritoneal dialysis patients: a systematic review and meta-analysis. *Blood Purif* 2018; 46: 350-358.
- 23) JOTTERAND DREPPER V, KIHM LP, KÄLBLE F, DIEKMANN C, SECKINGER J, SOMMERER C, ZEIER M, SCHWENGER V. Overhydration is a strong predictor of mortality in peritoneal dialysis patients – Independently of cardiac failure. *PLoS One* 2016; 11: e0158741.
- 24) MEYER TW, HOSTETTER TH. UREMIA. *N Engl J Med* 2007; 357: 1316-1325.
- 25) ALMERAS C, ARGILÉS A. The general picture of uremia. *Semin Dial* 2009; 22: 329-333.
- 26) CIRILLO L, CUTRUZZULÀ R, SOMMA C, GREGORI M, CESTONE G, PIZZARELLI C, TOCCAFONDI A, PIZZARELLI F, DATTOLO PC. Depressive symptoms in dialysis: prevalence and relationship with uremia-related biochemical parameters. *Blood Purif* 2018; 46: 286-291.
- 27) KING-WING MA T, KAM-TAO LI P. Depression in dialysis patients. *Nephrology (Carlton)* 2016; 21: 639-646.
- 28) HALEN NV, CUKOR D, CONSTANTINER M, KIMMEL PL. Depression and mortality in end-stage renal disease. *Curr Psychiatry Rep* 2012; 14: 36-44.
- 29) WANG HJ, JIANG GY. Psychological care for family members of uremic hemodialysis patients. *Journal of Modern Integrative Medicine* 2007; 16: 5056.
- 30) NI ZH, JIN HJ. 70 years of peritoneal dialysis development in China. *Chinese Journal of Hemopurification* 2019; 18: 661-663.
- 31) TAN LJ. Application of continuity of care in volume management of out-of-hospital peritoneal dialysis patients under the WeChat platform. *Electronic Journal of Practical Clinical Nursing* 2019; 4: 173-174.