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Table of Contents

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Effect of Bundle Care on Deep Venous Thrombosis in Patients Received Renal Biopsy

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Abstract

Objective: To explore the effect of bundle care on the incidence of venous thromboembolism (VTE) in patients who received renal biopsy, and provide reference for clinical care. **Methods:** 300 patients with nephrotic syndrome who received renal biopsy in our hospital from February 2018 to August 2020 were selected and randomly divided into the observation group and the control group, with 150 patients in each group. In the control group, patients were given routine care: informing the precautions before and after operation, observing the changes of vital signs and bleeding after operation, etc. In the observation group, patients were given bundle care intervention, including preoperative, intraoperative and postoperative routine care, ankle pump exercise, Intermittent Pneumatic Compression (IPC) treatment and psychological care. The incidence of lower-limb venous thrombosis was compared between the two groups. **Results:** The incidence of deep venous thrombosis in the observation group was lower than that in the control group ($P < 0.05$), 1 case (0.6%) in the observation group and 8 cases (5.3%) in the control group; the peak velocity and mean velocity of lower-limb venous blood flow in the observation group were higher than those in the control group; the average length of stay in the observation group was less than that in the control group, and the satisfaction degree in the observation group was higher than that in the control group. The differences were statistically significant ($P < 0.05$). **Conclusion:** For patients who received renal biopsy, bundle care can help improve the peak velocity and mean velocity of venous blood flow, reduce the incidence of VTE, the average length of stay, and social costs, relieve their pain, and improve satisfaction degree of care; moreover, it plays an important role in reducing the incidence of deep venous thrombosis.

Keywords

Bundle Care, Renal Biopsy, VTE, Effect

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1. Introduction

"Bundle care" refers to a group of care interventions, each element of which is clinically proven to improve patient outcomes. Patient outcomes can be better improved under their joint implementation than single implementation. The application of "bundle care" can greatly increase the possibility of patients receiving care, so as to improve the overall quality of care [1]. Renal puncture biopsy is an invasive examination, in which a puncture needle is penetrated into the renal tissue under the positioning of B-ultrasound, and then a small amount of live tissue is taken for pathological examination. It is the gold standard for clinical diagnosis of renal diseases, especially glomerular diseases. It provides an important basis for the diagnosis, treatment, evaluated prognosis and diagnostic efficacy of renal diseases. At present, it has been widely used in clinic. VTE is one of the common complications after renal biopsy. The incidence of VTE reported in the literature is 3.63% - 20.82%. Therefore, in order to reduce the incidence of VTE in patients who received renal biopsy and relieve their pain, prevention is particularly important. In this study, 300 patients were selected to study the effect of bundle care on prevention of VTE after renal biopsy.

2. Clinical Data

General information 300 patients with nephrotic syndrome who received renal biopsy in our hospital from February 2018 to August 2020 were selected as subjects and they were randomly divided into control group and observation group, with 150 patients in each group. In the control group, there were 86 males and 64 females; the average age of patients was 41.8 ± 1.8 years old (from 18 to 68 years old); in the observation group, there were 96 males and 54 females; the average age of patients was 42.6 ± 2.5 years old (from 20 to 72 years old). For the differences in the general information between the two groups, there was no statistical significance ($P > 0.05$) (see Table 1).

Research Methods

Control group Routine care of Nephrology Department the first diagnosis responsibility system was adopted for patients, and the nurse in charge was responsible

Table 1. Proportion of general information of patients (%).

Subjects	Control group (n = 150)	Observation group (n = 150)	χ^2	*P*
Gender			1.396	0.237
Male	86 (57.3)	96 (64)		
Female	64 (42.7)	54 (36)		
Age/years old			0.892	0.639
<40	85 (52.6)	78 (34.5)		
40 - 65	56 (42.1)	64 (55.2)		
>65	9 (5.3)	8 (10.3)		

for the whole process of patients. The doctor in charge diagnosed and treated the patients according to the diagnosis and treatment routine, and the nurse in charge carried out routine care such as admission education, diet guidance, preoperative preparation and postoperative care according to the doctor's advice.

The observation group was given bundle care: on the basis of the control group, ankle pump exercise, IPC treatment and passive exercise were added, and the details are as follows:

3. Care

3.1. Preoperative Preparation

The nurse in charge guided the patients to cooperate with the doctor to do preoperative preparation well, including routine blood test, coagulation test, a set of virus tests, electrocardiogram, chest X-ray and B-ultrasound examination, so as to avoid the absolute contraindications in the operation. The changes of vital signs were monitored. The use of anticoagulant drugs such as vasoactive drugs was stopped three days before the operation to prevent postoperative bleeding. One day before the operation, the patients were trained to urinate in bed to avoid postoperative urinary retention. The intravenous indwelling needle was retained half an hour before the operation.

3.2. Postoperative Care

1) After renal puncture, the patients were sent back to the ward by flatcar; the situation of puncture site was checked, and an ECG monitor was used to monitor their vital signs, QH * 6 times. The patients were guided to lie flat for 6 hours, and they can freely turn their heads, move both upper limbs, slightly move legs and feet under the condition of no relaxation and no exertion; the volume and color of urine were observed; bolsters were used to raise up both lower limbs by 20 - 30 degrees, making the distal end of lower limbs higher than the proximal end. The nurse in charge valued the patients' chief complaint, helped them to eat, and guided their amount of diet. 6 hours later, the nurse in charge removed the sandbag pressure at the puncture site, and helped the patients turn over.

2) Activities

a) Encourage the patients to breathe deeply. Studies have shown that 5 minutes' active deep breathing exercise every 2 hours can help reduce the symptoms of Deep venous thrombosis (DVT) in the patients who received joint replacement, and also relieve the hypercoagulable state of blood, effectively lowering the risk of VTE [2]. The training of lip contraction and effective cough can increase diaphragm movement, reduce chest pressure and increase blood return [3], so as to prevent venous thrombosis.

b) Compress gastrocnemius muscle manually, and do passive massage from foot to thigh and from far to near, 30 minutes a time, 3 times a day [3].

c) Contract quadriceps femoris isometrically, straighten knee joint in supine position, and stretch thigh muscle for 5 seconds, relaxing for 2 seconds; or stretch for 10 seconds, relaxing for 10 seconds.

d) Ankle pump exercise. The ankle active "rotation" exercise had the strongest promoting effect on the femoral venous blood flow, which made the peak velocity of femoral venous blood flow increase by 69.3%, mean velocity increasing by 69.1% [4].

i) Flexion-extension motion: the patients lied flat, stretched their lower limbs, relaxed their muscles and slowly hooked their feet, making their toes towards themselves to the maximum for 5 - 10 seconds; and then slowly pressed their toes down to keep them for 5 - 10 seconds to the maximum, and finally relaxed themselves. This was a set of motions, which could be repeated, at least 6 times a day.

ii) Rotation exercise: the patients, lying flat, stretching their lower limbs, and relaxing their muscles, centered on their ankles, and rotated their feet 360 degrees.

3) Intermittent pneumatic compression (IPC). At present, IPC is a common method to prevent DVT, which repeatedly pressurizes and depressurizes the affected limb and regularly inflates and deflates to prevent thrombosis [5] [6]. Before treatment: the medical staff explained to the patients the method and purpose of IPC, as well as the possible feelings or reactions of the body during the treatment. In addition, attention points should be emphasized with the patients during the treatment, and the comprehensive examination should be carried out to ensure the stable performance of the instrument. Firstly, the size of the pressure leg-sleeve was determined according to the circumference of the patient's lower limbs; and then during the treatment, the patient took the supine position, and the two lower limbs were wrapped in the pressure leg-sleeve, with the end of the inflation being set at 45 mmHg; the inflation was from the ankle to the thigh in turn, and then when the air bag was filled, the air was deflated. This process was cycled for a total of 40 minutes, once in the morning and afternoon every day.

4) Psychological care. The activity disorder caused by staying in bed brought great inconvenience to patients and affected their life and work. In addition, pain, infusion and other factors made patients nervous. Therefore, care staff should sympathize with and care for patients, guiding them to read books and listening to music, so as to distract their attention and reduce their pain. In the process of treatment, care staff should patiently explain the development process, treatment process and nursing points of the disease, so as to remove patients' doubts, enhance their confidence in overcoming the disease, and get their active cooperation.

5) Health education. As for diet, patients should eat light and digestible food with high calorie, high protein and vitamin and keep off cigarettes and alcohol. They were encouraged to drink water when their urine volume keeps a normal

level; notably, for the patients with edema, the amount of water in and out should be accurately recorded, controlling the amount of drinking water (make ends meet). Their activities should be guided, and they should not eat the food or medicine of promoting blood circulation and removing blood stasis within 3 months, avoid bearing heavy load, and prevent the occurrence of cold and other infections.

4. Observation Indexes

1) Peak velocity and mean velocity of lower-limb venous blood flow and the incidence of VTE.

2) Length of stay. Record the time from admission to discharge between the two groups, and compare the average length of stay between the two groups.

3) Medical satisfaction survey. Through telephone follow-up, the medical satisfaction of discharged patients was investigated, including: very satisfied: 80 - 100 points; satisfied: 60 - 79 points; dissatisfied: <60 points.

5. Statistical Analysis

SPSS23.0 was used for statistical analysis; t-test was used for comparison of measurement data, and χ^2 test was used for comparison of count data; $P < 0.05$ means that the difference was statistically significant.

6. Results

6.1. Incidence of Postoperative Complications in Two Groups

Through χ^2 test, the incidence of VTE in the observation group was significantly lower than that in the control group, and the peak velocity and mean velocity of venous blood flow were higher than those in the control group. The difference was statistically significant ($P = 0.0001$) (see Table 2).

6.2. Length of Stay

The time from admission to discharge was recorded. Based on statistical analysis, the length of stay was observed, the length of stay in the observation group being significantly less than that of the control group ($P < 0.001$) (see Table 3).

Table 2. Incidence of VTE and peak velocity and mean velocity of lower-limb venous blood flow after operation [(x- ± s), cm/s].

Group	Case	Incidence of VTE (%)	Peak velocity	Mean velocity
Observation group	150	0.6	58.41 ± 8.25	31.14 ± 5.23
Control group	150	5.3	43.33 ± 8.05	23.02 ± 5.49
t	-	4.6	15.9	13.1
p	-	0.03	0.0001	0.0001

Table 3. Comparison of the length of stay between the two groups (days).

Group	The average length of stay
Control group	10.8 ± 8.3
Observation group	7.8 ± 5.2
t	3.75
P	0.0002

Table 4. Comparison of medical satisfaction between the two groups (cases).

Group	Case	Very satisfied	Satisfied	Dissatisfied	Satisfaction (%)	Total satisfaction
Control group	150	94	20	36	76	114 (76%)
Observation group	150	120	18	7	94	138 (92%)
χ^2						14.29
P						0.0002

6.3. Medical Satisfaction Survey

By χ^2 test, the medical satisfaction rate of the observation group was significantly higher than that of the control group (P = 0.0002) (see **Table 4**).

7. Discussion

VTE is a global health problem, seriously endangering human health. The occurrence of VTE is occult, and its clinical manifestations are not specific; 50% - 80% of VTE have no clinical symptoms [7]. There are great differences in clinical symptoms and signs of VTE in different patients [8]. Patients who received renal puncture and biopsy are also the high-risk population of VTE. Once VTE is formed, and a long-term treatment is needed. Therefore, the following six aspects should be done: early screening, early prevention, early warning, early diagnosis, early treatment and early rehabilitation, which are the key points of VTE's prevention and treatment; and among them, the most important link is early warning [9].

This study discusses the application of bundle care to prevent the occurrence of VTE after renal biopsy; and based on Caprini assessment scale, this study effectively assesses the situation of patients by giving bundle care. The results show that the peak velocity and mean velocity of lower-limb venous blood flow in the observation group were higher than those in the control group, while the incidence of VTE was lower than that in the control group, and the medical satisfaction score was higher than that in the control group (P < 0.05). It is confirmed that the application of bundle care intervention after renal biopsy plays an important role in preventing VTE and can help observe the disease changes or complications that may cause adverse prognosis in advance, which also reflects the comprehensive ability of care staff. Meanwhile, it improves the treatment

level of departments, and reduces patients' pain, the average length of stay, and social costs, which improves patients' satisfaction. Therefore, the prevention of VTE after renal biopsy has important clinical and practical value, which is worthy of clinical application.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Clinical Application of Quantitative Nursing for Lower Cranial Nerves Injury after Cerebellopontine Angle Tumors

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Abstract

Objective: To retrospectively analyze the clinical utility of quantitative nursing measures of 10 cases of lower cranial nerves injury after cerebellopontine angle tumors surgery to provide the experience for improving the recovery rate and living quality of these patients. **Methods:** The clinical data of 10 cases of lower cranial nerves injury after cerebellopontine angle tumors surgery was analyzed. For problems such as dysphagia and dyspnea of these patients, the nursing care focused on strict monitoring, timely oxygen inhalation nursing, posture nursing, ventilator nursing, swallowing function training, etc. **Results:** After received quantitative care, 10 patients with lower cranial nerves injury after cerebellopontine angle tumors surgery were recovered well, and their symptoms such as dysphagia and dyspnea were gradually improved and safely discharged. **Conclusion:** Lower cranial nerves injury is one of the serious complications after removal of cerebellopontine angle tumors, which impacts the life and health of patients. Caregivers should accurately understand and analyze the symptoms, and quantitative and targeted nursing measures for posterior cranial nerves injury are helpful in the postoperative rehabilitation of patients and improve their living quality.

Keywords

Quantitative Nursing, Cerebellopontine Angle Tumors, Lower Cranial Nerves Injury

1. Introduction

Cerebellopontine angle (CPA) tumors, of which vestibular schwannoma (75% -

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85%), meningioma (10% - 15%), and epidermoid tumor (7% - 8%) are the most common neoplasms, make up about 5% - 10% of all intracranial tumors. Most patients with this disease show hearing impairment and facial nerve dysfunction [1]. And the main treatment measures for neoplasms in this area are observation, radiotherapy, and surgery [2]. At present, with the development of surgical technology, the surgical treatment of CPA tumors based on micromanipulation has been more and more valuable. However, postoperative complications such as cerebrospinal fluid leakage, meningitis, and lower cranial nerves (LCNs) injury are mainly caused by accidental injury during electrocoagulation or traction during separation, and characterized by dysphagia, dyspnea, and other symptoms [3] are still impossible to neglect. At present, general health education and routine nursing care measures administered by caregivers to patients after CPA tumors surgery, to some extent, contribute to postoperative recovery. But the lack of a specific and individualized quantification protocol for the impairment of LCNs leads to poor patients' compliance and low quality of care, which makes it impossible to achieve the desired outcome. Therefore, for patients complicated with LCNs injury, taking corresponding quantitative nursing measures according to the severity of symptoms should be considered an effective approach to treating LCNs injury after CPA tumors surgery. Reviewing 121 patients treated in the Department of Neurosurgery of our hospital with CPA tumors from January 2016 to December 2020, there were 10 patients complicated by LCNs injury postoperatively. We found that they all achieved satisfactory results with good prognoses after the application of formulated quantitative nursing strategy. Here it reports as follows.

Ethical Review

This case report was approved by the clinical ethics committee of the Zhuji Affiliated Hospital of Shaoxing University. Informed consent had been acquired in writing.

2. Materials and Methods

2.1. General Information

In our hospital from 2016 to 2020, 10 cases of cerebellopontine angle tumor with postoperative cranial nerves injury were seriously selected according to the inclusion criteria: 1) preoperative MRI and contrast-enhanced MRI showed that the cerebellopontine angle area was occupied; 2) no LCNs injury before an operation, such as dysphagia, hoarseness, drinking cough, dyspnea; 3) LCNs injury after operation; 4) age 20 - 70 years old; 5) no other severe visceral diseases. There were 4 males and 6 females, aged from 29 to 70 years old. Suboccipital retrosigmoid sinus approach was adopted in operation, with the tumor resected completely. Postoperative pathology demonstrated vestibular schwannoma in 7 cases, meningioma in 2 cases, and hyalinizing hemangioma in 1 case. The basic information of each patient (**Table 1**), enhanced MRI images (**Figure 1**) and

Table 1. Summary of patients' basic condition and clinical features.

Case	Age (years)	Gender	Chief complaint	Lesion's location and size	Pathology	Symptoms after surgery
1	29	Male	Right ear progressive hearing lose and tinnitus for 2 years	Right, 15 × 15 mm	vestibular schwannoma	Dysphagia (II)
2	50	Male	Left ear tinnitus for 7 months	Left, 26 × 24 mm	vestibular schwannoma	Dysphagia (III)
3	62	Female	Headache and right ear hearing lose for 1 month	Right, 23 × 15 mm	meningioma	Dysphagia (IV), dyspnea
4	52	Female	Right ear tinnitus for 1 month	Right, 19 × 13 mm	hyalinizing hemangioma	Dysphagia (IV)
5	70	Male	Vertigo and left ear hearing loss for 2 months	Left, 25 × 21 mm	vestibular schwannoma	Dysphagia (V), dyspnea
6	58	Female	Right ear hearing loss for 2 years and facial numbness for 10 months	Right, 36 × 30 mm	vestibular schwannoma	Dysphagia (III), dyspnea
7	61	Female	Left ear tinnitus for 3 months	Left, 13 × 15 mm	vestibular schwannoma	Dysphagia (III)
8	37	Male	Left ear tinnitus for 3 years	Left, 17 × 36 mm	vestibular schwannoma	Dysphagia (II)
9	63	Female	Right ear hearing loss for 8 years	Right, 4.2 × 6.2 mm	vestibular schwannoma	Dysphagia (IV), dyspnea
10	47	Female	Dizziness and headache for 2 months	Right, 17 × 15 mm	meningioma	Dysphagia (III)

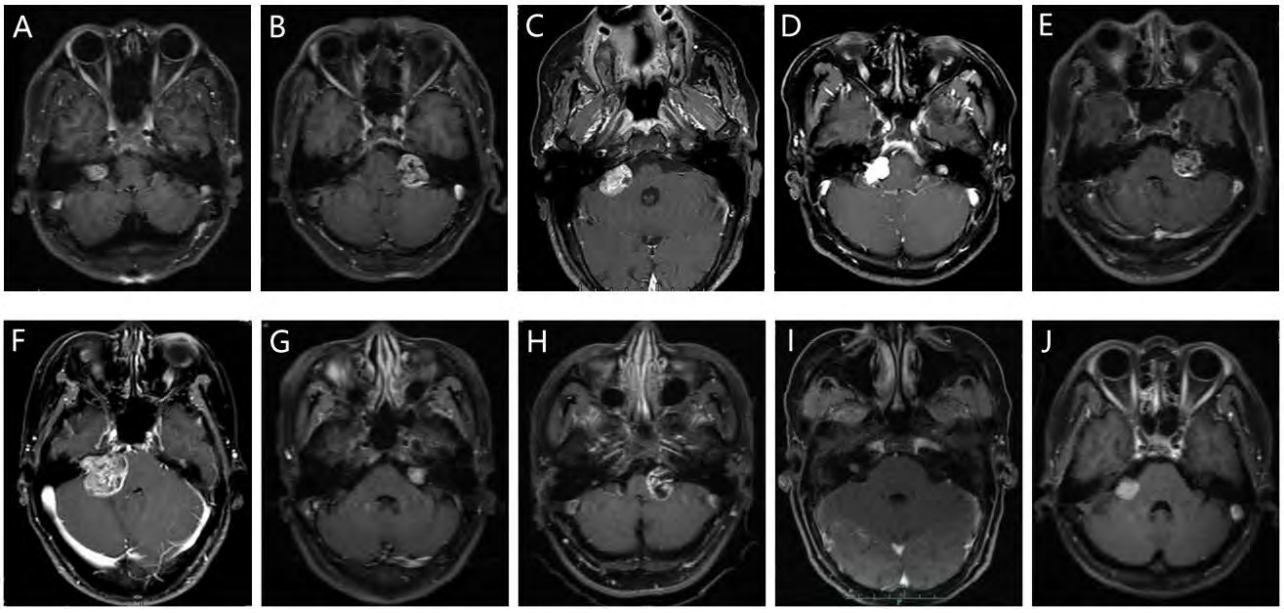

Figure 1. Contrast enhanced MRI of the patients.

characteristics of the selected patients (Table 2) are as follows:

2.2. Methods

2.2.1. Operative Procedures

After general anesthesia, patients underwent tumor resection with a posterior

Table 2. Patients' characteristics (n = 10).

	Number
Age (years)	
<40	2
40 - 60	4
≥60	4
Gender	
Male	4
Female	6
Pathology	
Vestibular schwannoma	7
Meningioma	2
Hyalinizing hemangioma	1
Dysphagia	
Level II	2
Level III	4
Level IV	3
Level V	1
Dyspnea	4

approach to the suboccipital sigmoid sinus in the lateral decubitus position. The dura was opened intraoperatively with cross scissors, allowing CSF to slowly leak out of the cistern. After confirming the course of facial and trigeminal nerve and tumor surface vessels under low cranial pressure, the tumor was isolated, and care was taken during this procedure to prevent brain stem injury. Upon completion, the wound was hemostatic, irrigated, and sutured layer by layer or using titanium mesh for tension-reducing sutures in patients with high incision tension, combined with sterile bandaging of the head.

2.2.2. LCNs Injury Assessment

Deglutition disorders evaluation was performed by the water swallow test (WST). Patients took a sitting position and drank 30 ml of 37˚C - 40˚C water with personal habits, divided into 5 levels according to the following criteria: drinking water once successfully within 5 s (I); swallowing more than twice to drink completely within 5 s (II); drinking water once but coughing or choking (III); drinking water more than twice with coughing or choking (IV); drinking interruptedly and incompletely due to repeat coughing or choking (V). Respiratory function evaluation was performed by observing patients' respiratory rate (RR), blood oxygen saturation (SpO_2), and lip color.

2.2.3. Quantitative Nursing Measures

1) Position nursing. Postoperatively, patients' body were in a dorsal elevated position at a 30˚ angle to the horizontal plane to reduce the intracranial blood

flow and decrease the cranial pressure. Meanwhile, biased their heads to one side to prevent glossoptosis and thus breathing difficulties. In patients with large vestibular schwannoma, a healthy lateral position was taken because a large cavity would be left after removal of the tumor in the pontocerebellar region, preventing cranial collapse. Moving the head was rigorously prohibited in patients and their families for 24 h postoperatively in order not to compress other tissues such as the brainstem and thus serious consequences. The sandbag was put on one side of patients' heads within 1 week postoperatively for a brake. Patients were instructed to rest strictly in bed until full recovery of activity function.

2) Psychological nursing. Negative emotions such as anxiety and depression were often found in patients after tumor or cranial surgery. Caregivers should actively communicate with them to understand their psychological appeal, timely comfort them, and encourage patients to cooperate with postoperative rehabilitation treatment. In addition to the necessary contact with patients required by daily nursing, nurses should take the initiative to talk with patients and their families at least once a day to understand the pressure and difficulties faced by patients, and help them analyze these challenges and provide proper solutions; Encourage patients to record their psychological activities and emotional changes every day, discuss the sources of stress with the consent of patients, and help them ease their emotional problems.

3) Vital signs monitoring. Postoperatively, patients consciousness were observed, and the pupillary light reflex was examined for the presence and sensitivity. Unilateral absence of light reflexes or unequal size of bilateral pupils indicated cerebral hernia; the absence of bilateral light reflexes suggested that patients were in critical condition and required prompt rescue. Nurses should timely measure their temperature and promptly notice the increase in temperature caused by postoperative fever or intracranial infection. If the temperature is excessive, a wet towel should be used as a cold compress on the forehead for physical cooling. The bedside multifunctional monitor was used to real-time measure patients' blood pressure, heart rate, electrocardiogram, and oxygen saturation. Nurses ought to pay attention to the risk of hypotension caused by mannitol dehydration, disturbance of hydroelectrolyte balance, and so on in patients with head trauma, so the urine volume, blood pressure, and intracranial pressure must be kept in the normal range.

4) Respiratory function nursing. Four patients with respiratory dysfunction were found in this study. Postoperatively, their heads were placed on one side to prevent dyspnea caused by glossoptosis. Patients with LCNs injury had poor pharyngeal reflex, who often failed to clear food that had remained in the pharyngeal wall in a timely manner, and care needed to be taken to clean their mouths on time and prevent viscous materials such as food residue or sputum from obstructing the trachea. Tongue retropulsion of LCNs injury and aspiration pneumonia from aspiration or mechanical ventilation could lead to hypoventilation and alveolar diffusion dysfunction, and severe cases to II breath prostrate with $SpO_2 \leq 90\%$, cyanosis of the lips and lower extremities, dysphoria,

and confusion. A bedside multifunctional monitor was used to monitor RR and SpO_2 of patients while observing the color of their lips to determine the presence of hypoxia. When a critical situation such as respiratory distress occurred, a ventilator or invasive tracheal intubation was adopted in order to guarantee the vital signs of patients. When a ventilator was used, caregivers should lay emphasis on the disinfection of the tube and regular testing of its patency, and extubate the tube when patienta regain spontaneous respiratory function. When tracheostomy was used, extubation was indicated when their respiratory function and cough reflex recovered, known as the protocol of "Early Cut and Early Extubate", to help them regain spontaneous breathing ability.

5) Swallowing function nursing. In this study, 10 patients had dysphagia symptoms such as hoarseness or choking cough in varying degrees. According to the water swallow test (WST), there were 2 patients with level II, 4 patients with level III, 3 patients with level IV and 1 patient with level V. Dysphagia interventions could be divided into two forms, a compensatory approach and a rehabilitation approach [4]. Quantitative program should be developed based on the degree of dysphagia in different patients. Patients with swallowing test level I (5s or more) or level II or III were mild patients, a total of 6 cases, and the compensatory approaches started within 1 day after the operation. 1) Dietary modifications: Patients were provided with corresponding food based on the International Dysphagia Diet Standardisation Initiative (IDDSI) framework (**Figure 2**), and the difficulty gradient of swallowing food was increased in the process, so that patients' swallowing function can be gradually normalized. Researches have shown that foods/drinks in IDDSI III-IV are located in the solid-liquid coincidence section, which are best for patients with dysphagia. Foods in this interval

Figure 2. The dietary texture levels of IDDSI (iddsi.org/framework).

range decrease firmness of solid foods to facilitate chewing and swallowing, while also increasing the consistency of liquids to avoid the risk of choking [5]. Patients were given extremely thick fluids or pureed food (determined by the amount of liquid remaining after 10 s in a 10 ml syringe tube) within 2 weeks after surgery to start training, and gradually switch to pasty solid but digestible food and thin liquids to increase the difficulty of swallowing. The thickness of the foods/drinks should be controlled to the extent that it is unlikely to remain on mucous membranes, including thick milk, pureed vegetables, crushed meat, and so on. Excessive fiber-containing foods such as asparagus and eggplants should be avoided to prevent patients from aspiration due to incomplete chewing, foods mixed with solid and liquid such as watermelon should be avoided to prevent patients from bucking or aspiration due to poor liquid control, and overly crispy foods should be avoided to prevent debris from obstructing the esophagus [6] [7]. In addition, the amount of food should be adapted to trigger the pharyngeal reflex, with the dose starting at 3 to 4 ml once and gradually increasing to about 20 ml. 2) Postural training: Patients were seated and fed with the body tilted forward at 20˚ [6] [8], so that the food could enter smoothly and stimulate the swallowing reflex, preventing aspiration during eating. 3) Assisted feeding: The spoon was pressed against the base of tongue during eating to stimulate swallowing movements, and verbal encouragement was given to create a proper atmosphere for feeding, while patients were instructed to adjust the head position on their own to aid in swallowing the food. Patients with swallowing test level IV-V were severe patients, a total of 4 cases, and they were fed with the nasogastric tube within 2 days postoperatively, and the two forms of swallowing function training started combinedly 2 days later. The methods for compensation were described above. The purpose of rehabilitative training was to prevent muscle disuse atrophy and enhance the motor abilities and coordination of the oral, facial, lingual, and jaw muscle groups [9] [10]. Patients trained under the nurse's demonstration and instruction for 15 min every approach twice a day. a) Tongue movement: Patients were instructed to extend their tongues as far forward, right, and left as possible and kept the tongue base elevated. The tongue was applied resistance with a tongue depressor during extension, and patients were instructed to counteract bilateral buccinator muscles for resistance exercises. At ordinary times, Patients could use the tongue to sweep the gums up and down, right and left, and make a "K" sound for exercising. b) Lip movement: It consisted of closing the lips, pouting, and smiling. Training was conducted by applying resistance through separating patients' lips with double fingers while closing lips, pulling lips corners externally while pouting, and pulling down lips corners while smiling. c) Temperature stimulation: The tongue spatula was placed in ice water for half a minute, and after removal, it repeatedly stimulated the deutomala, soft palate, pillars faucial, root of tongue, and retropharyngeal wall of patients to induce the pharynx reflex to achieve the training effect. 4) Glottic training: Patients were instructed to speak of "ah" loud to close the glot-

tis; or to inhale vigorously, swallow saliva while holding their breath, and then exhale and cough. Recovery of glottic function was achieved through the supraglottic swallowing training described above.

3. Result

Among the 10 patients in this study, there were 10 patients with dysphagia. After one month of compensatory or rehabilitation swallowing function nursing according to individual conditions, both mild and severe patients' swallowing function recovered well, and their performance in WST improved differently (Table 3). There were 4 of the 10 patients with dyspnea, including 3 patients treated with ventilator and 1 patient treated with endotracheal intubation, who showed progressive improvement in respiratory function after nursing care, as indicated by return of spontaneous breathing capacity with $SpO_2 \geq 90\%$. After targeted nursing, all patients had stable vital signs and good mental status, and finally met the rehabilitation criteria and were successfully discharged.

Table 3. Nursing measures and outcomes for patients with dysphagia.

Case	Dysphagia level (before nursing)	Dysphagia severity	Nursing approaches	Dysphagia level (1 month later)
1	II	Mild	Compensatory approaches started within 1 day after surgery	I
2	III	Mild	Compensatory approaches started within 1 day after surgery	I
3	IV	Severe	Nasogastric tube feeding started within 2 days after surgery, and compensatory approaches combined with rehabilitative approaches started 2 days later	II
4	IV	Severe	Nasogastric tube feeding started within 2 days after surgery, and compensatory approaches combined with rehabilitative approaches started 2 days later	I
5	V	Severe	Nasogastric tube feeding started within 2 days after surgery, and compensatory approaches combined with rehabilitative approaches started 2 days later	III
6	III	Mild	Compensatory approaches started within 1 day after surgery	II
7	III	Mild	Compensatory approaches started within 1 day after surgery	II
8	II	Mild	Compensatory approaches started within 1 day after surgery	I
9	IV	Severe	Nasogastric tube feeding started within 2 days after surgery, and compensatory approaches combined with rehabilitative approaches started 2 days later	II
10	III	Mild	Compensatory approaches started within 1 day after surgery	I

4. Discussion

The cerebellopontine angle region is located in the deep part of the cranial cavity, where the surrounding anatomical structures are complex. The operative mortality of CPA has been significantly reduced owing to the development of microsurgery [11]. The suboccipital approach is commonly used for the resection of CPA tumors [12]. Lower cranial nerves (LCNs) are composed of the glossopharyngeal nerve, vagus nerve, accessory nerve, and hypoglossal nerve. It was once thought that the odds of LCNs being damaged intraoperatively were low unless the tumor was large [13] [14]. But recent studies have shown that although the injury of LCNs is relatively rare in patients with cerebellopontine angle tumors, the incidence of LCNs injury can reach 8.4% after operations in those patients. Most of them may have swallowing dysfunction (including dysphagia and choking cough), dyspnea, or hoarseness, and these complications may delay the postoperative recovery, decrease the qualities of life of patients, and even cause death [3] [15] [16] [17] [18]. However, because symptoms of cranial nerve injury such as dysphagia are predominantly seen in the elderly, acute stroke, and critically ill patients, systematic nursing interventions are currently focused on the stroke population [19]. Therefore, patients with LCNs injury after cerebellopontine angle tumors surgery need a set of systematic quantitative nursing methods, and the diversified performances also make many aspects of the nursing processes need to be paid more attention to. The specific analysis is as follows: 1) Dysphagia is one of the commonest clinical manifestations of glossopharynx or vagal nerve injury [4] [17], which often exposes patients to the risk of food aspiration and asphyxia. Management of dysphagia includes compensatory approaches consisting of appropriate position, gradient diet and auxiliary feeding adjustment, and rehabilitative training consisting of orolingual pharyngeal muscle group training in strength and resistance and pharyngeal reflex stimulation [4] [20] [21]. Recent studies have shown that oral feeding according to food structure adjustments better improves swallowing function than tube feeding, intravenous nutrition while meeting patients' dietary needs [22]. Because of the disunity of standards of food classification across countries, the international dietary classification IDDSI was used in this study to meet the needs of dysphagia patients of different ages and grades. In our study, 6 patients with mild dysphagia (water swallow test ≤ level III) and 4 patients with severe dysphagia (water swallow test ≥ level IV) all achieved good results after quantitative care. It is suggested that adjustment of diet by IDDSI and quantitative swallowing muscle function training should be emphasized in nursing of patients with LCNs injury after CPA tumors resection. 2) Dyspnea and wheezing after LCNs injury are often caused by aspiration pneumonia secondary to dysphagia, vocal cord paralysis due to vagus nerve injury, and tongue base descent as a result of glossopharyngeal nerve injury [16] [23]. Nursing work should include regular cleaning of patients' mouth, observation of lip color, and monitoring of respiratory rate, blood oxygen saturation and oxygen supply status in

real-time. Simultaneously, it is advisable to tilt patients heads to one side to prevent the anteroposterior wallowing tongue base due to nerve paralysis. In an emergency, tracheal intubation should be established in advance, and after tracheal intubation, we should pay attention to the prevention of ventilator-associated pneumonia (VAP) via rational nursing care. In this study, 4 patients with dyspnea recovered well after the above special care. 3) Patients with LCNs injury show anxiety and depression due to the pressure of tumors, brain operations, and complicated LCNs injury, so giving positive psychological nursing to those after the operation is conducive to helping patients recover.

5. Conclusion

Above all, lower cranial nerves injury is one of the serious complications after resection of cerebellopontine angle tumors, which affects prognosis and the life and health of patients. Caregivers should clearly understand the characteristics of the tumors' location, and accurately analyze the postoperative complications. Implementation of quantitative nursing interventions is able to minimize the adverse outcomes secondary to postoperative lower cranial nerves injury, and will allow patients to recover as soon as possible.

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Authors' Contributions

Yanfei Zhang and Jingxin Fu contributed equally. As the main writers of this study, they completed the data curation and formal analysis and wrote the main part of the manuscript. Qichao Chen, Yedong Wan, Ming Zhao took part in the analysis and collation of literature. Longbiao Xu, as the designer and director of the project, guided the report writing. All authors read and agree to the final text.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Psychological Stress and Nursing Intervention of Sick Children

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Abstract

Holistic nursing is guided by modern nursing concept and framed by nursing procedures, providing high quality nursing according to patients' psychological, physiological, social and cultural needs. To develop holistic nursing in pediatrics is to develop nursing services for the purpose of satisfying the various clinical needs and psychological nursing of children. It is of great significance to establish holistic nursing concept, provide high quality nursing service for hospitalized children, and take targeted psychological intervention to alleviate their adverse psychological stress, which can improve treatment compliance and clinical efficacy, and shorten the length of hospital stay. In this paper, scientific and effective psychological nursing stress intervention means are used to improve the psychological anti-stress level of hospitalized children, and nursing intervention means are put forward, contribute to the maintenance of children's mental health and the development of children's mental health work and also to provide a theoretical basis for the intervention and treatment of children with psychological stress.

Keywords

Sick Children, Psychological Stress, Nursing, Psychological Intervention

1. Introduction

In the process of interaction between the organism and the environment, children form a variety of conditioned reflexes based on unconditional reflexes, thus forming the initial psychological and psychological structure, which is the product of the interaction between the individual's special heredity and the special environment [1]. Functional stress in children mainly presents serious disorders in thinking, cognition, perception, emotion, behavior and other aspects, which

has a great impact on mental and physical health. It is often ignored by family members due to morbidity, atypical clinical manifestations and no special physical signs. It is found that the factors leading to children's psychological problems include diseases, bad social environment (such as car accidents), bad family environment and educational attitude, etc. [2]. Psychological nursing is a clinical nursing method that applies psychological knowledge and technology to solve children's psychological problems, improve children's confidence in life and promote their mental health [3] for existing and potential psychological problems of children. This text intends to explore the causes of the occurrence and development of hospitalized children's stress, and improve the level of children's psychological anti-stress with scientific and effective psychological nursing stress intervention means, which is expected to provide valuable data for the intervention of children's psychological stress and provide scientific basis for the exploration of children's psychological clinical intervention measures.

2. Physiological and Psychological Characteristics of Children

Children are in the process of growth and development, and their psychological and spiritual activities are also developing along with it. Due to their young age and lack of knowledge and understanding of the disease, their psychological activities change rapidly with the change of treatment situation, and their attention shifts quickly, and their emotional expression is obvious, exposed and simple [4]. Surgical bleeding, trauma and other stimuli will cause a strong psychological reaction to children. Psychologists have found that from birth to 3 months, infants can have 6 emotional reactions, including desire, joy, disgust, anger, shock and boredom. Babies under 6 months have no worries about leaving their parents, while children between 6 months and 4 years old have the greatest emotional disturbance when they are hospitalized [5]. Studies have also shown that anesthesia, especially during the induction phase, has been identified as an underlying cause of trauma. In a study conducted by Guarino M [6], 54% of children showed abnormal behaviors 2 weeks after surgery, of which 20% continued to 6 months after surgery and 7.3% continued to 1 year after surgery. Some psychosomatic diseases, such as stuttering, night terrors, enuresis, and bronchial asthma, can be caused by panic in children. The following are some common preoperative psychological states of children.

Fear is the most common reaction of children, mainly manifested as crying, refusal to food, sleep disturbance, refusal of examination and treatment, and refusal of surgery. Firstly, it is because the children are exposed to a strange environment; secondly, the pain of the disease and various diagnosis and treatment procedures bring adverse stimulation to the children [5]. Some researchers suggest that nursing staff should carry picture books, small toys or ornaments with them to distract children's attention and gain their trust and cooperation [7].

Dependence is manifested as behavioral degeneration. They do not do what

they can do and are completely dependent on their parents and caregivers. Such protective behavior also strengthens their dependence psychology. They are easily excited, wailing and willful, and love to lose temper [8]. Reasonable requirements of children should be satisfied as far as possible, and explanations should be given for those who cannot be satisfied [9]. Young children are most afraid of being separated from their parents. If parents are allowed to accompany them during preoperative preparation, it will be the best comfort for children.

The psychological development of children with anxiety is not complete, and the main reasons for the anxiety of children during the perioperative period are the separation of parents and family members and the fear of unfamiliar environment [10]. Older children (mostly school-age children) are very concerned about their disease, treatment to be received, body changes during and after the operation, the effect of the operation, etc., and they show anxiety, anxiety, anger, etc. [11]. For such children, we should have patience and full respect and understanding, give good guidance, tell them the condition at the same time, but also let them face the next treatment with a good attitude.

Pessimistic depression such children are mostly introverted, unwilling to communicate with others, and think that they are incurable. Performance for the words of the act alone, all around the loss of interest, serious people can produce the idea of suicide. For such children, more need the love and responsibility of medical staff, psychological counseling, establish a sense of trust, establish confidence to overcome the disease.

3. Warm and Thoughtful Care

It is found that the factors that lead to children's psychological problems include diseases, bad social environment, bad family environment and bad educational attitude. If the body is affected by the outside the body, a variety of pathogenic factors, and develop education errors or bad environment, the effect of disorder in the brain function, psychological activity cannot smoothly self adjusting, the cognition, emotion, thinking, behavior and activity will appear different degree of obstacles, which leads to the wrong understanding and judgment, and cannot correctly treat the objective things.

Children are hospitalized and come to an unfamiliar hospital from a familiar and warm family living environment. At the sight of the medical staff wearing white coats and the furnaces of the sick room, my mental state changed from relaxed and happy to nervous and fearful. Especially after the child is hospitalized, the mother cannot accompany the child to be hospitalized, the child subjectively do not want to be hospitalized. This situation is more prominent among preschool children and rural children. Therefore, the nurse should use kind words to contact and communicate with the children, can take the children to see other children in hospital when the injection, medicine, treatment, gradually make the child gradually eliminate tension. In addition, from the careful care of life, let the children who have been in hospital for a long time take the initiative to close to

new patients, and play with them, read comics, so that they feel the warmth of the new environment and the trust of the nurse, as soon as possible to adapt to the hospital living environment, with treatment, as soon as possible to return to health.

The children came from different living environments and formed their own personality characteristics. And because of the level of education = different, so that their intelligence development is also very different. Most of the children from cities grow up in kindergartens. They have good intelligence, strong understanding ability and quick adaptation to the environment. However, the children from rural areas showed more timid, withdrawn and reluctant to talk when they were first admitted to hospital. But children have strong ability to imitate and eager to learn the psychological characteristics. They observe and accept new things quickly. For the children in New Hospital, according to these characteristics, we carry out targeted inspiration and induction, organize games and tell stories. When the child is examined and treated for the first time, let the child see their child's performance in the examination and treatment process, praise and encourage the brave and cooperative children, the nurse speaks with the child clearly, eliminate the children's fear, let them accept the treatment and examination happily. I once nursed a five-year-old female rural child with thrombocytopenic purpura. At the beginning of treatment in the hospital, she cried, refused to be fed, and twice quietly ran out of the ward, terrified. I began by telling her stories, showing her children who were being treated, praising her for her bravery, and saying that she was strong enough to stay in the hospital without her mother. She did not cry, but with a tender voice told me, "aunt, I am not afraid, injection do not cry" I helped her comb her hair, wash her face, she trusted me. After a period of time to ask the efforts, so that she gradually adapt to the hospital life, not only can cooperate with the treatment, but also cultivate the ability to live independently, and doctors and nurses to establish a deep relationship.

4. Instruct Children to Accept the Treatment Diet to Lay a Foundation for Treatment

The children come from different family environments and have their own living and eating habits. The nurse should give guidance on the treatment and diet according to the different conditions of the children and let them accept it. Nephritis, kidney disease in children, to limit the intake of sodium, the need to give a low-salt or no-salt diet, children are not easy to accept the initial, because the food is tasteless and lead to a loss of appetite. In this regard, preschool and school-age children can tell them the relationship between clear diet and treatment, but also to give some vinegar or sugar for appropriate adjustment, and encourage children to eat more fruit, high protein food. Most children love sweets, and it is not easy to strictly control the intake of sugar for diabetic children. Therefore, on the one hand, it is necessary to tell children the harm of eat-

ing sugar on the disease, and on the other hand, a small amount of sweet food can be given appropriately. After a period of hospitalization, the vast majority of children can consciously obey the treatment diet, to lay a good foundation for treatment.

The regular life of the hospital can make the children get rid of some free and undisciplined, capricious, bad habits of eating snacks. After the hospital, the children are placed in a collective living environment, eating, sleeping, learning and playing together, and can influence each other. We give education and guidance from the positive perspective according to the psychological characteristics of children with simple thoughts and strong self-esteem. For example, there is a 7-year-old boy suffering from nephritis, who is pampered by his parents at home. He is headstrong and likes to eat snacks. When they entered the new hospital, they did not listen to anyone. We will pay attention to observe his character characteristics, found that he has the ability to observe things, is willing to help the advantages of small friends, so pay attention to praise his every bit of progress in the children, from life, diet to guide him to correct shortcomings, cultivate good habits, so that he has made significant progress in all aspects.

5. Pediatric Nurses Should Have Good Nursing Skills

Pediatric nurses are required to keep improving on all technical operations, and the movements should be stable, accurate, light and fast [12]. When children are worried about their condition and in an emotional state, the nursing staff can according to the actual condition of children, and consider the psychological acceptance of children, their condition with concise and clear sentences described, so that children can better understand their own condition. The caregiver could say, "There's something in your body that's not clean, and the doctor will clean it up while you're sleeping, and it won't hurt like a needle, you just need to sleep and you'll be fine when you wake up." Through this simple and popular sentence, children can understand their own conditions, gradually reduce negative emotions, so as to better cooperate with the nursing staff to carry out various work. In the process of child care, because children's own heart quality is not strong, is easy to produce fear, nervousness, and so on the care of nursing staff in the language communication skills, must notice when children from the psychological perspective, relieve the tension and fear, let it can work with their own care, so as to obtain better nursing effect, promote the healthy growth of children.

Through clinical observation of L, we have realized that children's psychological development is influenced by external education. Most children have developed the ability to perceive emotions since infancy, and they are accustomed to warm and gentle voice and warm and considerate behavior. The treatment of children varies according to age and disease. Neonates and infants have weak skin perception. When making injection and venipuncture, the action should be light and fast, and the injection should be successful, and the crying caused by

stimulation should be minimized. For preschool and school-age children, with the improvement of their brain thinking ability, their sensitivity to pain is enhanced [13]. Corresponding psychotherapy can be given, such as suggestive therapy, educational therapy, etc. Before the treatment, patiently explain the operation process and purpose to the children, so that the children maintain a good psychological state; And with a steady working attitude and excellent basic skills, to obtain the trust and cooperation of children, to achieve the purpose of treatment. Such as penicillin allergy test, intramuscular injection, venipuncture, aerosol inhalation and other treatment, the first time for children are not accepted. You can first let the children who have been treated demonstrate; when penicillin injection is made in the large ward, attention should be paid to the children who have been in hospital for a long time, and encouragement should be given actively before injection. During injection, the method of fast needle insertion, slow drug pushing and fast needle pulling is adopted [14]. And children with laughing, distraction, eliminate tension. Through clinical practice, we have received good results, most of the children consciously, actively accept treatment. For some children who cannot be well coordinated on treatment, we will be patient to induce; For example, a 9-year-old boy with cirrhosis ascites, because of a long time of treatment in the other hospital, at the beginning of the hospital, the intramuscular injection of penicillin produced fear, crying and resistance, his mother repeatedly coexhorted, lost his temper is ineffective. Therefore, we first gave a sick child treatment, comfort and encourage him, let his mood slowly stabilize, and let the sick children in the ward to encourage him, and finally successfully accepted the treatment.

6. Master the Psychological Changes of Patients, Do a Good Job in Clinical Observation and Nursing

Children have weak resistance to disease, rapid change of disease, and poor expression ability; Unable to specifically describe their own symptoms and discomfort after illness. In particular, infants often show crying and irritability. Therefore, as a pediatric nurse, we should learn to carefully observe the changes in the condition of children and assist doctors to provide the basis for diagnosis.

Because the development of children's nervous system is not complete, the excitatory focus under the cerebral cortex is easy to spread, and children with different age, disease and individual differences and other factors, a variety of different responses to hospitalization and physiological and psychological changes. For example, some children show the insecurity of leaving their loved ones at the beginning, mental depression, fear and silence, behavioral degeneration, decreased appetite and even refusal to eat. Some older children can also suffer from disease, show negative and pessimistic mood, and even refuse to accept treatment. Therefore, the nurse should have the same noble sentiment as the mother loves the child, from the perspective of children to find problems; In mind, in life, always give guidance and care [15]. Such as more contact and con-

versation with them, let other children take the initiative to close to them, patrol the ward at night, pay attention to their cover to prevent catching cold; Do not let them carry their own soup or porridge to avoid being scalded. Teach children to help each other so that they feel warm and loved in the hospital as well as at home.

The effect of some drugs can also make children produce different abnormal psychology. For example, for the child that changes nephritis, kidney disease because take big dose hormone for a long time, they show feeling fragile, easy excited, temper is irritable wait for a characteristic. Encounter quarrel between children or not happy, on the cry to make a scene, temper, for such children, we will send an old nurse organization they learn, play games, participate in some light labor, such as taking turns on duty sweeping the floor, wipe the table and so on. Choose a monitor among them and have regular meetings. When there are conflicts, education guides them to solve them by themselves, so that they are placed in a comfortable and stable environment, reducing adverse stimuli from the outside world, and enriching their spiritual life [16].

A competent pediatric nurse should not only master medical knowledge and nursing skills, but also carefully study and master the psychological and physiological characteristics of children. In clinical practice, observation and analysis of patients' psychological responses and targeted psychological nursing can effectively cooperate with clinical treatment and achieve the goal of early rehabilitation [17].

In conclusion, children's psychology is an open self-organizing structure, which has the characteristics of integrity, transformation and automatic adjustment.

7. Conclusion

Children's psychology, as an organic system structure, is the whole of the automatic adjustment of the transformation system. There are internal connections between individual psychological process and personality, between psychological process and personality, between consciousness and unconsciousness, and between social consciousness and individual consciousness. They are not the result of simple addition, but complex interdependence and mutual dependence. The whole of constraints, consciousness and personality are formed and developed in the development process of psychological activities. At the same time, the established consciousness and personality also offset the development of psychological process and subconsciousness. The development of children's psychology is a systematic process of continuous construction. The influence of a certain environmental stimulus not only plays a role in a certain aspect of individual psychology, but also plays a role in the whole psychology. At the same time, the individual psychological change is completed by the individual's automatic regulation, which is the automatic result of individual consciousness activities. In short [18] [19] [20] [21], whether it is the development of children's individual psy-

chological process and personality, or the development of consciousness level and structure, they are all systematic processes. Although the theoretical framework of children's psychological stress is not strictly defined and the research field is not perfect, its significance to children's survival and development has prompted people to continue to study. There is still a long way to go to truly understand the nature of psychological stress, but fortunately we have made progress towards this goal.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Vaccination Coverage and the Risk of Hepatitis B Virus Infection amongst Medical and Paramedical Students Practicing at the Bamenda Regional Hospital in Cameroon Sub-Saharan Africa

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Abstract

Introduction: The endemic nature of hepatitis B virus (HBV) in Sub-Saharan Africa is a significant public health problem that places health care providers (medical students inclusive) at increased risk of occupational exposure. However, vaccination against HBV is not systematic among medical students in Cameroon. Thus, we sought to evaluate awareness and HBV vaccine coverage amongst medical students in Cameroon. **Aim:** The present study was aimed at determining the proportion of Medical and Paramedical students on internship at the Bamenda Regional Hospital (BRH) who are vaccinated and immune to hepatitis B virus (HBV). **Methods:** This was a hospital-based cross sectional study carried out at the BRH in Cameroon. Questionnaires were administered to 120 participants who signed an informed consent form and venous blood samples collected in dry tubes for the HBV-5 PANEL test. Data were collected within a period of two weeks. HBV vaccine status was defined as complete (3 doses), partial (1 or 2 doses), and unvaccinated. **Results:** Of 120 participants (87 females and 33 males), 56 (46.7%) were vaccinated at least once against HBV; 15 (12.5%) were partially vaccinated and 41 (34.2%) completely vaccinated. Out of the 56 vaccinated individuals, only 13 (23.2%) were confirmed immunized against HBV by testing positive for hepatitis B surface antibodies. Only 3 (5.4%) students had done post-vaccination serologic test to confirm their immunized status. There was high exposure to potentially infected body fluids like blood (97.5%) and urine (87.5%). There was equally poor practice of adequate preventive measures like regular hand

washing and the proper use of personal protective equipment. A prevalence of 3.1% of HBV amongst the unvaccinated group was recorded. **Conclusion:** Only 1 in 3 medical students had completed the HBV vaccination series and only 26.8% of this cohort was confirmed immunized against HBV. This highlights the need for improved health policies aimed at increasing access and coverage of HBV immunization in high risk groups such as health workers.

Keywords

Hepatitis B Virus, Hepatitis B Surface Antibodies, Immunization, Medical and Paramedical Students

1. Introduction

Hepatitis B virus (HBV) infection is a global public health problem affecting millions of people every year and causing disability and death [1]. Globally, it is estimated that approximately 257 million people are infected, particularly in low-income and middle-income countries [2] [3]. About 1 million people die each year (~2.7% of all deaths) from causes related to viral hepatitis, mostly liver disease including liver cancer and cirrhosis [1] [4]. Hence, it is considered the tenth leading cause of death worldwide [5]. Despite the increasing seroprevalence, there is no routine screening of high risk groups in most countries because of lack of public awareness, inadequate funding for health care settings, and the expensive nature of the test [6]. Though the lifetime risk of contracting HBV in the general population is 4.8%, this can be reduced significantly through vaccination. For example, infant vaccination reduces this value by 68%, while adolescent vaccination reduces it by 45% [7]. Health care personnel (including Medical and Paramedical students) are at an unavoidable higher risk of contracting blood borne pathogens like HBV due to their interaction with patients [8]. Fortunately, Hepatitis B virus vaccine has been present for over three decades to prevent this well-known occupational disease [5]. Immunization is achieved in 95% of the population following the administration of three doses of HBV vaccine at zero, first and the sixth month respectively. To ascertain the immunity, antibodies against HBV surface antigens (anti-HBs) are measured 6 to 8 weeks following the administration of the third dose of the vaccine. Anti-HBs greater than 100 IU/mL imply good response to the vaccine while values between 10 and 100 IU/mL will require immediate booster dose to improve response and antibodies measured again in 6 to 8 weeks' time. Furthermore, all those vaccinated need a booster dose of the vaccine after 10 years since the antibody titer declines with time [9]. The vaccine is produced following the purification of HBsAg obtained from the plasma of persons with chronic HBV infection [10] [11] [12]. This vaccine is meant to prevent HBV infection and its associated liver complications [10]. To achieve this, the vaccine must trigger an immune response which would produce anti-HBs at a concentration of >10 IU/mL at least 1 month and at most

2 months after the 3rd dose [13] [14]. About 5% - 15% of vaccines may not develop the expected immune response following the complete dose administration of the vaccine [15]. Usually, about 30% - 50% of people who do not respond to a primary 3-dose vaccine series with anti-HBs concentrations of >10 IU/mL, may respond to an additional vaccine dose or to a 3-dose revaccination series [15] [16]. Vaccination coverage of healthcare personnel (HCP) against this virus remains low especially in some developing countries. For example; in a research to determine the prevalence and vaccination coverage against HBV among HCP in Cameroon of a seroprevalence survey, only 199 (11.4%) of the 1747 participants were fully vaccinated [17]. In this study, we aimed at investigating vaccination coverage and the assessment of risk factors for HBV amongst medical and paramedical students on internship at the Bamenda Regional Hospital in Cameroon.

2. Methods

This was a hospital-based cross sectional study that made use of a self-administered questionnaire and the Aria HBV-5 RAPID TEST for hepatitis B surface antigen (HBsAg), antibodies against hepatitis B surface antigen (anti-HBs), hepatitis B viral protein (HBeAg), antibodies against hepatitis B viral protein (anti-HBe) and antibodies against hepatitis B core antigen (anti-HBc). The study was carried out at the Bamenda Regional Hospital (BRH) within the month of June 2020. The study population consisted of Medical and Paramedical students practicing at the BRH. Blood samples for the acquisition of biological data were collected from participants who consented and completed a questionnaire designed to obtain demographic data (age, sex, marital status) and information regarding knowledge of HBsAg status, whether or not they have received the HBV vaccine, the number of doses, the reason for non-vaccination for those who had not been vaccinated and their knowledge about the possible risk factors or exposure to HBV at their area of work. The questionnaire was made in English, pre-tested for clarity in a pilot study and adjusted accordingly. The sample size was calculated using the Cochran formula $n = \frac{z^2 p(1-p)}{d^2}$; where n = minimum required sample size, z = confidence level at 95% (standard value of 1.96), p = estimated prevalence of the infection among the population under investigation and d = type 1 error set at 5%. According to a previous study involving medical and paramedical staff of the Central Hospital in Yaounde-Cameroon, the prevalence of hepatitis B was 6.6% [18]. Hence,

$n = \frac{1.96^2 \times (0.066) \times (1-0.066)}{(0.05)^2} = 98.5 \cong 100$. For this study, we had a total of 120 participants.

3. Ethical Considerations

Ethical Clearance according to the Declaration of Helsinki was sought from the

Institutional Review Board of the Faculty of Health Sciences, University of Bamenda. Authorization was also gotten from the Director of the Bamenda Regional Hospital. Written informed consents were obtained from participants following careful explanation of the study protocol.

4. Statistical Analysis

Results were recorded into a log book; filled questionnaires coded and all data obtained keyed into Microsoft Office Excel and imported to Statistical Software Package for Social Science (SPSS) version 22.0 for statistical analysis. Categorical variables were summarized using proportions and displayed on Tables and Charts.

5. Results

This study involved 120 participants; 87 (72.5%) females and 33 (27.5%) males. Majority of the participants 112 (93%) were aged 20 - 30 years; 99 (82.5%) were single and 21 (17.5%) married. With respect to professional status, the study involved 45 (37.5%) Nursing/Midwifery students, 40 (33.3%) Medical Laboratory Science students and 35 (29.2%) Medical students. These students were either working in General Medicine, the Medical Diagnostic Laboratory, the Surgical Department of the hospital or in Obstetrics and Gynaecology units (Table 1). The proportion of medical and paramedical students completely vaccinated (received all three doses of the vaccine) against HBV was 34.2% (41 participants);

Table 1. Demographic characteristics of the study population.

Characteristic	Category	Frequency (N)	Percentage (%)
SEX	Male	33	27.5
	Female	87	72.5
AGE RANGE/years	15 - 19	7	5.8
	21 - 24	93	77.5
	25 - 29	19	15.8
	≥30	1	0.8
MARITAL STATUS	Married	21	17.5
	Single	99	82.5
	Divorced	0	0.0
PROFESSION	Medicine	35	29.2
	Nursing/Midwifery	45	37.5
	Medical lab scientist	40	33.3
DEPARTMENT	General Medicine	46	38.3
	Obstetrics and gynecology	32	26.7
	Surgery	2	1.7
	Laboratory	40	33.3
Total	Overall	120	100.0

15 (12.5%) were partially vaccinated (received 1 or 2 doses of the vaccine) against HBV and 64 (53.3%) participants had not received any dose of the vaccine (unvaccinated) (Figure 1). Reasons provided by the non-vaccinated group included; lack of money (73%), lack of time (8%), not aware of the existence of the HBV vaccine (8%), not aware of where to get the vaccine (6%), scared of side effects (3%) and rather scared of being infected by HBV through the administration of a vaccine (2%).

Out of the 56 vaccinated participants, only 13 (23.2%) were actually immune to HBV by testing positive for anti-HBs. A greater proportion of the vaccinated participants 43 (76.8%) were negative for anti-HBs and not immunized against HBV (Figure 2).

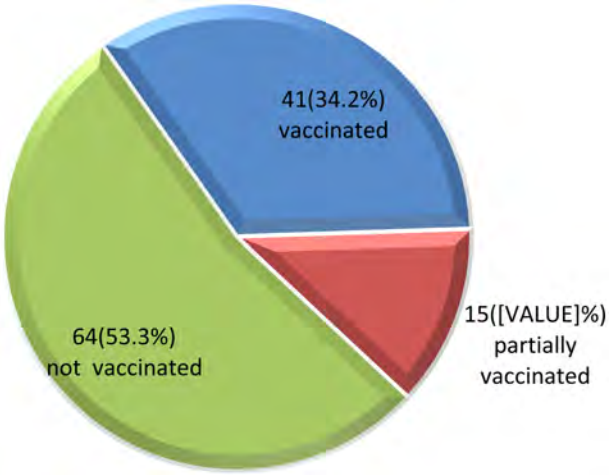

Figure 1. Percentage of vaccinated medical and paramedical students.

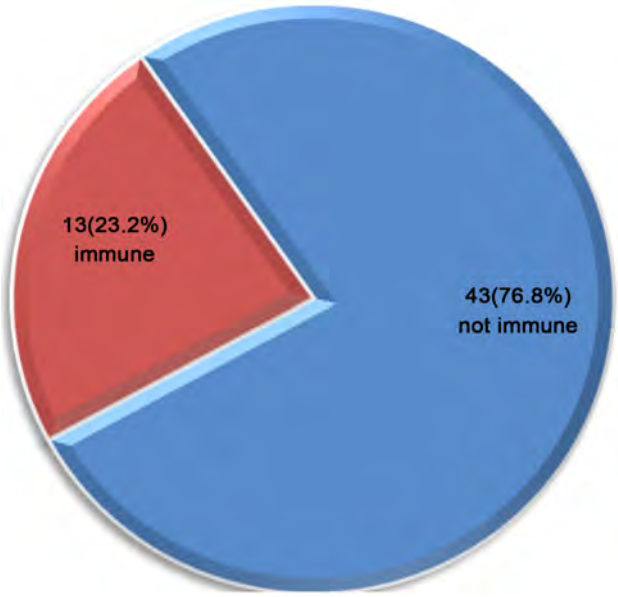

Figure 2. Proportion of immunized and non-immunized vaccinated participants.

The main body fluids study participants were exposed to included blood (97.5% of participants), vaginal discharge (88%), urine (87.5%) and sweat (86.3%). Other body fluids exposed to included CSF, sputum and saliva: 39.2%, 28.3% and 26.7% respectively (Figure 3). The highest exposure activity was the use of syringes for injection (55.9%), followed by venous blood collection (33.9%) (Table 2). Regular hand washing was practiced by 67 (55.8%) students while 47 (39.3%) washed their hands at times and 6 (5.0%) students rarely engaged in this practice (Figure 4). Regarding the use of Personal Protective Equipment (PPE), 55 (45.8%) students admitted to the regular use of PPE before any contacts with body fluids whereas the remaining 65 (54.2%) personnel did not use PPE regularly (Figure 5). All participants (100%) were aware they are exposed to HBV by the nature of their job.

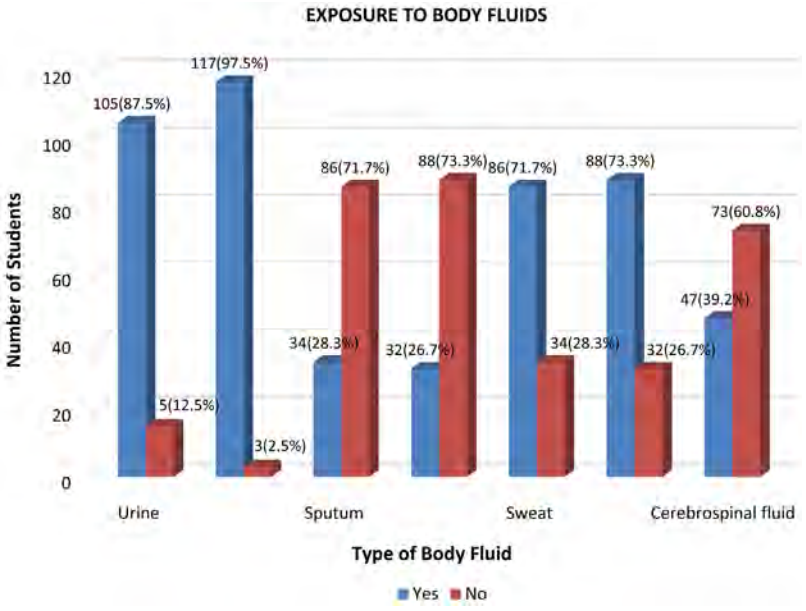

Figure 3. Proportion of exposure to different body fluids amongst medical and paramedical students.

Figure 4. Practice of hand washing by medical and paramedical students.

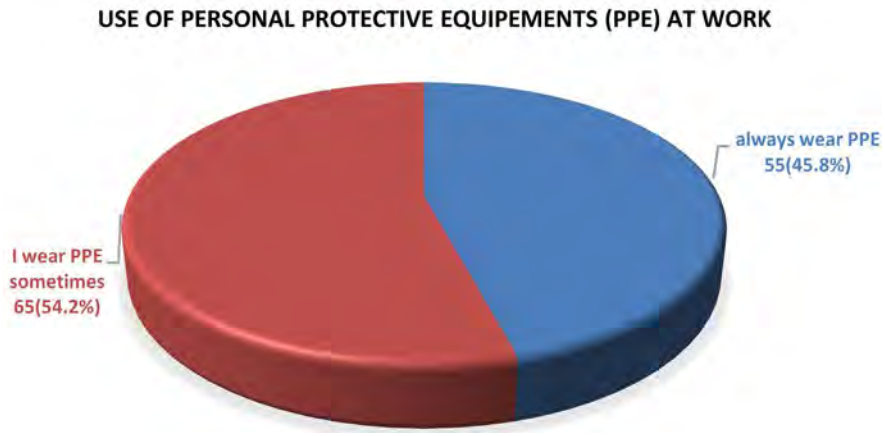

Figure 5. The use of PPE amongst medical and paramedical students.

Table 2. Number and proportion of students involved in exposure activity.

Exposure activities		
Variable	Frequency	Percentage
Surgery	6	10.2%
Preparing or giving injection	33	55.9%
Venous blood collection	20	33.9%
Total	59	100%

6. Discussion

This study was to determine the vaccination coverage of medical and paramedical students practicing at the Bamenda Regional Hospital in Cameroon Sub Saharan Africa. We noted that less than 50 per cent of these students had received the HBV vaccine and only 34 per cent of the vaccinated group had actually taken all three required doses of the vaccine. This is similar to studies carried out in other developing countries like Nigeria with a proportion of those who had received all three doses of the vaccine to be 34.8 per cent [19], but higher compared to a previous study in Cameroon with just 16.8 per cent of the participants who had received all three doses of the vaccine [20]. However, in a study involving health care workers; doctors and nurses in the United States of America (USA), a high proportion (81%) of the participants had received at least three doses of the vaccine [21]. The difference in vaccination coverage from one county to another could be explained by the fact that some governments have strict health care personnel vaccination policies whereas others do not [22] [23].

In this study, of the 56 students who had been vaccinated against HBV, only 13 (23.2%) participants were positive for antibodies against the hepatitis B surface antigen confirming immunization against the virus. The results were in line with a study in Nigeria by Olumuyiwa Odusanya *et al.* [24] where these antibodies were detected in 17.9 per cent of the vaccinated participants. We therefore emphasize on the fact that although an individual may have received the vaccine, there is need to verify for immunization post the vaccination process.

Six to eight weeks after completion of vaccination, it is necessary to measure anti-HBs in order to confirm immunization or the need for re-vaccination/booster vaccine; however, only 3 (5.4%) of the fully vaccinated participants in this study had undergone antibody testing to confirm their immunization status. We propose the need for sensitization and strict vaccination policies to ensure that those vaccinated especially health workers at high risk, are actually protected against this infection.

Two (3.1%) of the 64 participants who had not been vaccinated against HBV tested positive for HBsAg following a rapid screening procedure. It was noted from this study that almost all participants (97.5%) are exposed to blood either during procedures like setting up of intravenous lines, medical laboratory diagnostic activities or during major or minor surgical procedures. Given the fact that HBV is found in high concentrations in blood of infected individuals, the high prevalence of the virus in Cameroon but a low vaccination/immunization coverage, medical workers including medical or paramedical students on internship are at high risk of contracting the infection, necessitating health measures or government policies to enhance prevention.

We realized in current study that despite the high rate of exposure to potentially infectious biological fluids by participants, only 55.8% of the medical and paramedical students do disinfect their hands regularly by washing them during or after their routine activities involving getting in contact with these body fluids (**Figure 4**). Thus, an increase in their chances of contracting or transmitting highly infectious pathogens like HBV, Human Immunodeficiency Virus (HIV) and Hepatitis C virus (HCV), and this is exacerbated by the irregular use of personal protective equipment (PPE) by more than 50 per cent of the study participants (**Figure 5**). High exposure to hepatitis B in this study is comparable to that of Attaullah *et al.* [23] with occupational exposure through drawing of blood, recapping of syringes, disposal of used needles, insertion of drip, trash collections, surgical procedures, collision with sharp objects, fluid splashes, and cleaning of instruments.

Considering the unvaccinated group, up to 73 per cent of participants complained of lack of money as reason for not having taken the vaccine. In our setting, these vaccines are usually free during vaccination campaigns but are actually paid for off such periods and at a cost that might not permit non-salary earners like students to obtain. We therefore suggest that authorities of health institutions should consider sponsoring or subsidizing the HBV vaccine to facilitate and ensure its acquisition by students prior to their final year of internship in a hospital environment.

7. Conclusion

HBV infection is an important occupational hazard among health care personnel potentially preventable by vaccination and compliance to bio-safety measures at work. From this study, immunity against HBV due to vaccination amongst

medical and paramedical students working at the BRH is low. Only 13 (23.21%) of the 56 vaccinated students were actually immune to HBV by testing positive for anti-HBs. The prevalence of HBV following a screening exercise for participants in the unvaccinated group was 3.1%. Exposure is mainly by injuries due to the use of syringes for injection or blood sampling, and surgical procedures with poor practice of biosafety measures. We recommend strict government policies regarding vaccination against HBV, and the organization of regular seminars or educational programs by hospital authorities especially in developing countries, to ensure that safety measures are reliably followed by health workers to curb the spread of HBV and other life threatening infectious diseases.

Limitation of the Study

The Aria HBV-5 Rapid Test is limited to the qualitative detection of HBsAg, anti-HBs, HBeAg, anti-HBe and anti-HBc in human serum or plasma. Data regarding vaccination status was obtained through self-provided information which could be subjected to recall bias.

Conflicts of Interest

The authors declare no conflict of interest.

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Appendix

Questionnaire

Section One: Demographic Data

1) age in years: 15 - 19 [ ], 21 - 24 [ ], 25 - 29 [ ], ≥30 [ ]

2) Gender: Male [ ], Female [ ]

3) Marital status: Married [ ], Single [ ], Divorced [ ]

4) In which ward/department of the hospital do you work?

General Medicine [ ], Obstetrics and gynecology [ ], surgery [ ], Laboratory [ ], others [ ]

5) Which of these best applies to you regarding your profession

Medicine [ ], Nursing/Midwifery [ ], Medical laboratory science [ ]

Section Two: Knowledge (Awareness of Risk) and Vaccination Status

6) Are you aware you are at risk of contracting Hepatitis B due to your profession? YES [ ], NO [ ], I don't know [ ]

7) Have you ever been tested for hepatitis B? YES [ ], NO [ ]

8) Do you know your hepatitis B status? YES [ ], NO [ ]

9) Have you ever been treated for hepatitis B? YES [ ], NO [ ]

10) Have you heard about the hepatitis B vaccine? YES [ ], NO [ ]

11) Have you been vaccinated against hepatitis B virus? YES [ ], NO [ ]. if NO please move to question 20.

12) How many doses of the vaccine did you receive? One Dose [ ], Two Doses [ ], Three Doses [ ]

13) How long has it been since you took the vaccine? Few months [ ], 1 - 5 years [ ], 6 - 10 years [ ], >10 years [ ]

14) Did you ever do any test to confirm immunization against the virus? YES [ ], NO [ ]

15) If YES, what were you told?

I was told the vaccination process was successful [ ]

I was told that I need to take another dose of the vaccine [ ]

None of the above [ ]

16) If you were told to take another dose of the vaccine, did you? NO [ ], YES [ ]

17) If YES, when were you asked to come back for confirmation?

Six weeks [ ], eight weeks [ ] not mentioned [ ]

18) Have you ever taken a booster dose of the vaccine? YES [ ], NO [ ]

19) What was your source of the vaccine? Regional Delegation [ ], Hospital [ ], Pharmacy [ ]

20) I have not been vaccinated against hepatitis B virus because:

I do not think the vaccine is effective [ ],

I do not know where to get the vaccine [ ],

I have never heard about the vaccine [ ],

I do not have enough time to go and get the vaccine [ ],

I do not have enough money to buy the vaccine [ ],

I am afraid of the side effects of the vaccine [ ]

I am not at risk of getting hepatitis B virus [ ]

I think the vaccine will infect me with hepatitis B virus [ ]

I have colleagues who are vaccinated but are not immune, so I can't waste my time [ ]

If none of the above, please specify

SECTION THREE: RISK FACTORS AT WORK

21) Which of the following do you come in contact with?

Urine [ ], Blood [ ], Sputum [ ], Saliva [ ], Sweat [ ], Vaginal Fluid [ ], Cerebrospinal fluid [ ], none [ ]

22) Before handling the above fluid,

I do not wear gloves [ ], I wear gloves sometimes [ ], I must wear gloves [ ]

23) After contact with patient/body fluid,

I do not wash my hands [ ], I wash my hands sometimes [ ], I always wash my hands [ ]

24) Can you say with all honesty that you always wear your PPE when on duty? YES [ ] NO [ ]

25) I have had accidental exposure to hepatitis B when performing the following via a needle prick;

Surgery [ ], preparing or giving injection [ ], venous blood collection [ ]

26) Do you think the hospital is properly disinfected, YES [ ], NO [ ]

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Enablers and Barriers to Respectful Maternity Care in Low and Middle-Income Countries: A Literature Review of Qualitative Research

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Abstract

Background: Low and Middle-Income Countries (LMIC) account for 94% of maternal deaths annually. Interventions to reduce these deaths include; access to Emergency Obstetric Care (EmOC) and Skilled Birth Attendant (SBA) at childbirth. However, evidence indicates increasing access to EmOC, and SBA only does not translate into positive maternal and newborn outcome due to disrespectful care faced by women during labour. World Health Organization (WHO) guidelines emphasize on positive birth experience through Respectful Maternity Care (RMC). Therefore, this review aims to explore enablers and barriers to respectful maternity care in low and middle-income countries. **Methods:** We conducted an exhaustive literature search for studies that reported on enablers and barriers to respectful maternity care. Qualitative studies done in low and middle-income countries, published in English Language from the year 2000 to June 2020 were included in this study. Articles were screened by two researchers for eligibility and critical appraisal skills programme checklist was used to appraise the quality. The themes and quotes from the studies were extracted and synthesized using thematic synthesis. **Results:** The search strategy generated 14,190 articles and 54 studies met the inclusion criteria. Two main themes: interpersonal relationship and support, and privacy and confidential care were reported as both enablers and barriers to respectful maternity care. Strategies to promote RMC were: health education to pregnant women on care expected during labour, good communication between maternity staff and women, capacity building of staff on RMC and staff motivation. **Conclusion:** Respectful maternity care plays a big role in promoting health-seeking behaviours among pregnant women. However, women experience barriers ranging from provider behaviour, work environment and health system challenges. Ensuring a dignified and respectful

working environment could contribute to an increase in health seeking-behaviours and consequently reduction of maternal mortality.

Keywords

Respectful Maternity Care, Low and Middle-Income Countries

1. Introduction

Many women and children continue to die due to pregnancy-related causes [1]. The global maternal mortality estimates for 2017 indicate about 295,000 maternal deaths and approximately 810 daily deaths from preventable causes related to pregnancy and delivery, about 94% of these deaths occurred in low-income settings where women still do not have maternal healthcare they need [1] [2]. Approximately 5.3 million under five children died in 2018, about 47% of these deaths were newborns who died of preventable causes [3].

The causes of maternal mortality are grouped into direct and indirect, the direct causes include: obstetric haemorrhage, hypertensive disorders of pregnancy, sepsis, abortions, prolonged obstructed labour. The indirect causes include: malaria in pregnancy, anaemia, HIV and chronic medical conditions in pregnancy [4]. Haemorrhage is the commonest and can cause death to pregnant women within a few hours if unattended [2]. The causes of newborn death include: birth asphyxia, preterm birth complications, prematurity among others [3].

Interventions to reduce maternal and newborn deaths are known and include: access to Emergency Obstetric Care (EmOC) and Skilled Birth Attendant (SBA) at childbirth for timely interventions [5]. However, evidence indicates increasing access to EmOC, and SBA only does not translate into positive maternal and newborn outcome [6]. World Health Organization (WHO) guidelines emphasize on positive birth experience through Respectful Maternity Care (RMC) which promote healthcare-seeking behaviour and access to EmOC and SBA among pregnant women and can prevent maternal mortality [7]. This implies providing quality maternal care does not only require adequate equipment and professional skills but positive attitudes from health workers to promote optimal interventions in maternity care [8]. There is increasing evidence indicating many women in Low and Middle-Income Countries (LMIC) are deterred from facility-based delivery due to dehumanized care by healthcare providers [9], hence increasing attentions and calls towards good relationship between pregnant women and healthcare providers through promoting respectful maternity care [9]. Despite global attention on how women were treated with disrespect during labour, there are limited studies that have explored circumstances causing poor care and strategies to mitigate it [10] [11] [12]. Therefore, this study synthesized the existing literature on enablers and barriers to RMC as well as summarized strategies that would enhance respectful maternity care in low and mid-

dle-income countries which may help to improve maternity healthcare utilization and decrease maternal mortality.

Conceptual Framework

In Figure 1, pregnant women's decision to seek healthcare services start by looking at the health systems environment and structure of the service provision. Their expectations, previous experience from self or other women, perceived quality and satisfaction of care during antenatal and delivery compared with the outcome of the whole process influences their decision to seek care. Positive experience of care associated with respect attracts women for future facility-based care which can improve maternal and neonatal outcome as shown in an adapted framework for measuring RMC outcomes.

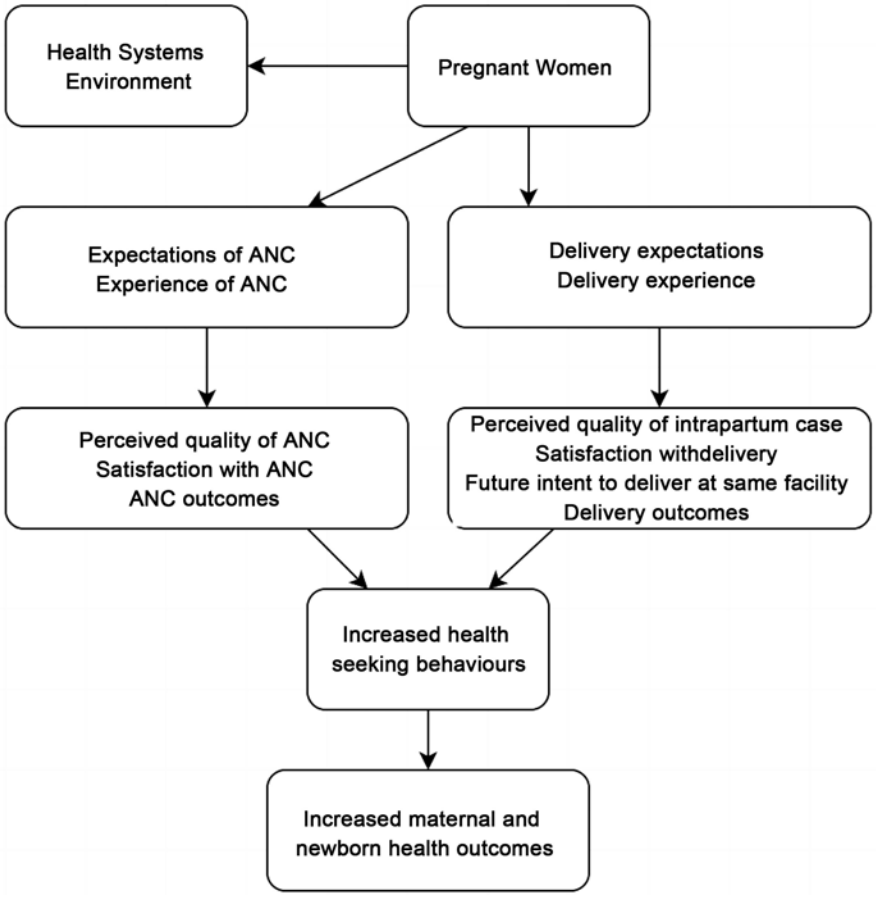

Figure 1. Conceptual framework for measuring RMC outcomes to maternal and newborn health as adapted from previous study [13]. ANC: Antenatal Care, RMC: Respectful Maternity Care.

2. Study Methodology

2.1. Study Design

This study is a literature review of qualitative studies conducted in low and middle-income countries that identified and explained the enablers and barriers to

respectful maternity care, and summarized strategies that would enhance respectful maternity care.

2.2. Justification for Choice of Design

Literature review as a stand-alone research method is a more or less systematic process of collecting, appraising and synthesizing existing literature to summarize the findings of all research relating to the objectives of the study [14]. Reviewing the literature would provide enhance understanding of the area of interest, provide current evidence that enhance transferability, improve clinical outcome and evidence-based decision-making processes as well as avoiding unnecessary duplication of research work [15] [16].

In respect to the topic, since year 2000 following Millennium Development Goals (MDGs), that is when most countries started investing in maternal health and encouragement for facility-based delivery [17], and several calls by governmental and non-governmental organization to provide humanized care to pregnant women during labour and delivery, yet studies regarding perception and experience of women during facility-based delivery as well as the practices of skilled health professionals toward humanization of birth care are limited [10]. Also, several studies indicate lack of public health research that identified both enablers and barriers to RMC [18], while other studies indicate previous reviews have identified disrespectful care not limited to individual alone but reflects systematic failures and deeply rooted providers attitudes and beliefs [9]. Therefore, literature review is suited for this study to synthesize and bring together current evidences on enablers and barriers to RMC and summarize strategies that would enhance RMC.

A qualitative study was suited to identify studies where pregnant women were asked and explored experiences they go through during labour and delivery at health facility by their attending health personnel, questions explored by healthcare attendants and other stakeholders on why certain actions or attitude were exhibited to pregnant women [19]. The enablers or barriers to respectful maternity care may arise from behavious and actions exhibited by healthcare workers such as physical abuse, non-consented care, non-confidential care, non-dignified care, discrimination, abandonment of patient during care and detention of patient in healthcare facilities [20]. Therefore, these actions or behaviours can be best explained or explored by qualitative method because, is suitable for understanding and describing the perception and views of women experiencing various forms of abuse during labour [21], hence qualitative approach better for this study to know how and why certain actions or behaviours are exhibited and summarize strategies that would enhance RMC.

2.3. Literature Searching

The literature was searched using the following databases; MEDLINE, CINAHL and Global health. The three databases focus on general medicine, nurs-

ing/midwifery and international public health respectively. They provide access to good range of literature type and journals. Using multiple database combination (the three databases) provide optimal searches and guarantee adequate and efficient coverage of available studies during literature review [22]. The topic for the research is also related to maternal health and CINAHL is a good database for most current Nursing and Allied health literature especially maternal and child health [23].

Additional search from the web pages of relevant international organization such as the World Health Organization (WHO), United Nations Children Fund (UNICEF) and World Bank was done.

All references of the retrieved papers and reports were also checked to identify any relevant literature on the same topic.

The literature searching was done via an access through the Liverpool School of Tropical Medicine search engine DISCOVER. The process was performed from 29th May 2020 to 26th June 2020. The process followed systematic approach during literature searching from title, abstract and full text search [24] and the search history of included and excluded studies were documented using PRISMA flowchart [25].

2.4. Quality Assessment of the Studies

The quality of this study was assessed using adopted critical appraisal skill programme checklist (CASP) [26]. It has ten (10) questions which are designed systematically and the response to the questions can be Yes, No or Can't tell with the total score of ten [26] [27]. Studies with score of at least 8 are regarded as high quality, 5 to 7 as medium quality and score of less than 5 are regarded as low quality studies [28].

2.5. Data Analysis

Thematic synthesis was used to analyze data in this study, a method mainly used to analyze data in qualitative research [29]. This method is frequently used for systematic or literature reviews in health and social science literature to answer qualitative research questions, it also identifies meaning of social phenomena the way the participants experience it or perceive it [19] [30].

2.6. Ethical Consideration

This study is a literature review that used published studies and there is no direct or indirect contact with a human subject. However, all included research papers were carefully screened for ethical approval and adherence with principles of research ethics.

3. Results

3.1. Results of Literature Search

The search from the three databases yielded a total of 14,190 articles (MEDLINE =

1418, CINAHL = 1490, Global health = 11282) and 28 materials were identified from the web page of WHO—Reproductive Health Library (WHO—RHL). After removing the duplicates electronically using Endnote citation software, a total of 12,772 articles remained. After screening the titles and abstracts, 58 studies were met the criteria. Following full texts screening, a total of 54 studies were selected and included in the review. A PRISMA flowchart, Figure 2 summarizes the searched history of included and excluded studies with reasons.

3.2. Study Description

3.2.1. Geographical Distribution

This study included 54 studies done in 19 low and middle-income countries in Asia and Africa. The majority of the included studies (48) were conducted in Africa and the remaining six (6) studies in Asia. Almost half (22) of the included studies were conducted in East Africa with Tanzania having the highest number of studies included in this review (eight studies). Also included in the review is one multi-country study comprising of Southern and East African countries (Ethiopia, Kenya, Tanzania, Rwanda and Madagascar). With regard to the settings, 13 studies were conducted in rural settings, 13 studies also in urban and 28 in mixed/peri-urban settings.

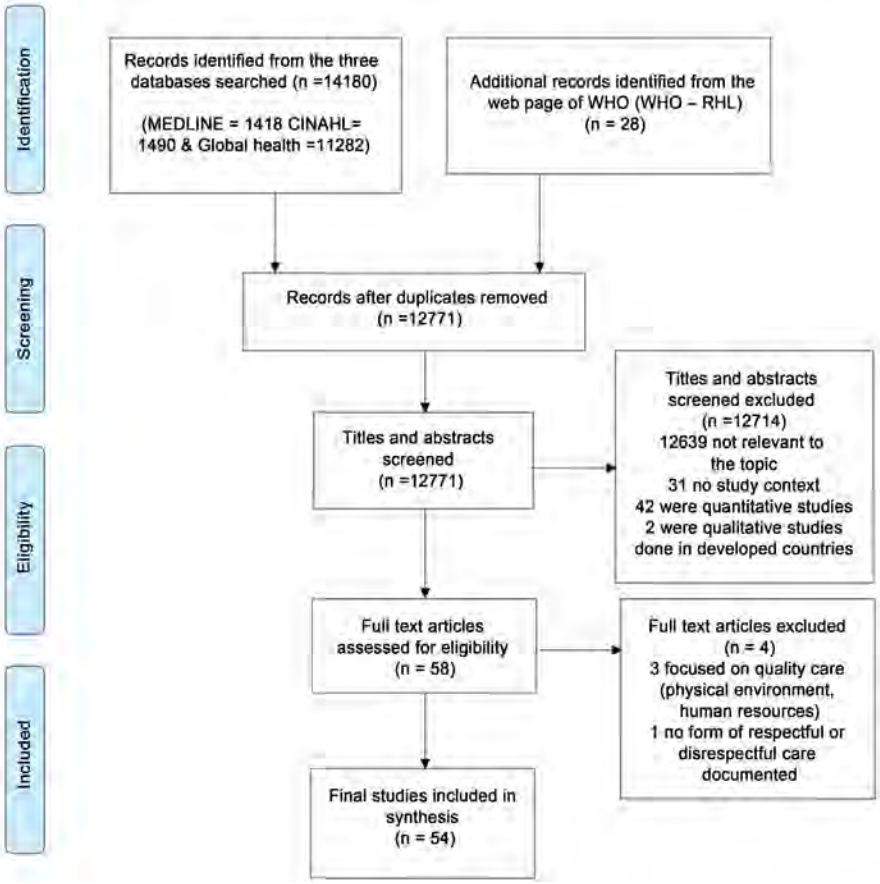

Figure 2. PRISMA flowchart showing process of selecting the studies [25].

3.2.2. Description of Themes

The synthesis of findings from the included studies generated themes and sub-themes. Two themes and five sub-themes were identified relating to factors that enhance respectful maternity care and two themes with five sub-themes also related to factors that inhibit RMC. The strategies that would facilitate RMC were represented in four main areas.

Factors that enhance respectful maternity care in low and middle-income countries.

1) Good interpersonal relationship and support

There were five sub-themes under this major theme;

a) Good reception

Good reception and welcome of pregnant women by the healthcare staff was mentioned by women in six studies. Women reported that good reception upon arrival provides comfort and assures them of supportive and respectful care during delivery [31] [32] [33] [34] [35]. Direct observations of labour in the delivery room carried out by society of Obstetricians and Gynaecologists of Burkina Faso showed good reception of the pregnant women in the delivery room promoted satisfaction throughout the delivery and was expected to encourage women to go for hospital-based delivery in future pregnancy [36].

"*As for me I feel relaxed when a midwife greets me upon my arrival. Just a greeting and a smile assures me of good care*" [34].

b) Information provision

Information provision during labour and delivery was mentioned in majority of the studies but four were related to this objective. Women reported that appropriate information on the progress of labour and involvement in the care decision provides pain relief and promotes satisfaction throughout delivery [31] [33] [37].

"*The nurses/midwives always tell me that my cervix has opened to this level* (*example four centimeters*) *and others after assessment…. Interestingly she interpreted my laboratory results for me, truly I thought she was a medical doctor because she explained herself very well to my understanding*" [33].

In another study, in response to the questions by a woman in labour room on how to adopt a certain position to relief her pain, the midwife responded well to her questions with associated respect [38].

"*When I was experiencing severe pain, she told me to lie on the side, sit or adopt any position and I feel comfortable*" [38].

c) Promptness of care

Two studies mentioned how quick intervention in care plays a role in saving lives and at the same time lead to respect and satisfaction to women and can promote facility-based delivery [39] [40].

"*When I arrived, I was complete, they delivered me immediately but had some bleeding of which they stopped. One hour later, I went to the bathroom and fainted from there, they promptly attended to me, gave me IV fluids and did*

some suturing down there. If it had been before I would not have survived" [40].

d) Dignified care

Care of women devoid of physical and verbal abuse was mentioned in 20 studies. Gentility of healthcare staff on how they carry out examination of pregnant women during labour was narrated by women to convey respect and feeling of satisfaction [37] [41] [42].

"*she was very gentle with me. She didn't rough handle me.*" [41].

Some women expressed that midwives can comfort them during delivery by encouragement and support devoid of verbal or physical abuse. It was also narrated that the dignified care received can promote them and others to seek care in the same facility in subsequent pregnancies [32] [34] [38] [43] [44] [45] [46].

"*Some nurses they comfort you, they direct you how to push, and they sing a song for you.* (…) *They comfort you in a good way. Let's pray to God and you are going to deliver safely. When in the end you deliver safely, next time you will be motivated to come because the nurse was very nice, she can help you*" [32].

Women reported to have crossed borders to seek respectful and friendly services irrespective of the cost [21].

"*As I live by the border, I prefer going to hospital* (*over the border in a neighbouring country*) *although I need to spend more money on transport, food and family companion because health professionals there are friendly*" [21].

Women considered provision of basic materials such as sanitary pad and other supportive material during labour and delivery as respect and encouraging to facility-based delivery [31] [39] [47] [48] [49].

"*when I delivered, I was given a cloth to use as a sanitary pad. The nurse was not disgusted that I was soiled, she wiped me clean. The cloth that was underneath was removed. Therefore I see that I was properly cared for*" [31].

Women narrated that they were referred by their fellow women due to previous supportive and dignified care received [50] [51] and one woman narrated what attracted her to deliver in the hospital was the dignified care received by her friend on accompanying her to the same hospital [52].

"*There was a friend of mine who was pregnant and requested me to escort her during the time of delivery. She delivered from* (*here*). *The way staff treated her attracted me to deliver from there*" [52].

e) Psychological support

Three studies indicated that women expressed their satisfaction with the care they received due to good psychological support. Women narrated that the companionship received during labour and delivery by midwives as they were not left alone, they were supported which reduced the stress of labour [42] [43] [47].

"*There were three of them* (*midwives*) *sitting around my bed. They were talking to me. Yes, they were a companion to me*" [42].

2) Privacy and confidential care

Five studies mentioned the role of privacy and confidential care in promoting

respect and improving maternal healthcare services. Women said provision of physical barrier in the labour room secured privacy to them during labour and provide comfort, respect and feeling of good care throughout delivery [31] [45].

"*The curtains were drawn so that people passing by would not see what was happening inside*" [31].

In two studies, women narrated that limiting the number of people in the labour room make them to feel comfortable and respected, also provides confident and satisfaction during delivery [48] [50].

"*It was just the nurse and I* (*in the delivering room*). *I would like to be alone with the nurse. I think that is proper*" [48].

Many stressful and shameful events may occur during labour. Therefore, women patronized facilities that provide respectful and confidential care. In these studies, women stressed how the healthcare staff keep secrete of what happened to them during delivery which was associated with respect and satisfaction [31] [33] [50].

"*During my delivery a lot of things happened. It got to a time I messed myself up. The midwives just helped me as if I was their daughter. If she was someone else, she would be saying I am the one who delivered her, and I messed myself up. With this I see that, the midwives kept confidentiality. She did not say anything to anyone*" [33].

Factors that inhibit respectful maternity care in low and middle-income countries.

1) Lack of interpersonal relationship and support

There were five sub-themes under this major theme;

a) Poor communication

Poor communication between healthcare providers and women was mentioned in majority of the studies (32/54). Many women described their delivery experiences as non-supportive, disrespect associated with embarrassing statements, including insults from healthcare staff [32] [41] [44] [53] [54] [55] [56].

"*The health workers are mistreating us. For instance when a patient has called for help they ignore by saying I was not there when you were having sex with your husband*" [53].

Women also described the care they received from the doctors and midwives as unfriendly associated with shouting and disrespect [21] [31] [33] [35] [37] [38] [42] [46] [50] [52] [57]-[63].

"*I messed on the floor, with the blood because I was pushing* (*short laugh*) *she* (*nurse*) *was there in the office, now I was messing and she told me um, um, 'Go and get a mop there and make your mess clean'*" [58].

Lack of information or involvement in the decision during the entire labour and delivery in healthcare facility was considered as lack of respect in the following studies [31] [39] [48] [49] [58].

"*They did not tell me anything, I just saw the vehicle ready and they told me you are going to* (*X referral hospital*) *because you are going for an operation*"

[39].

Denied chances to talk to healthcare personnel was disturbing and disrespectful to women in these studies [64] [65].

"*They will not even give you chance to talk. They will just shout at you, but you have nothing to say or to do than to manage*" [64].

Some women expressed their decision not to seek facility delivery, prefer to deliver at home due to previous disrespect and lack of good communication by healthcare providers in healthcare facilities [21] [48] [55] [57] [61] [64] [66] [67] [68].

"*There is one mother who I have spoken with quite often, she says she delivered by herself. She said she called the nurse to come, but the nurse said, 'Don't disturb me so much.' So, the mother stayed and delivered by herself. …the mother could not go back to the hospital next time*" [57].

b) Non-consented care

Non-consented care was mentioned in four studies. Women express concern over lack of respect on service provision due to inability of healthcare providers to seek permission before carrying out any procedure [45] [50], women reported that sometimes students examine them without any communication [63]. On the other hand, the providers reported asking for consent for any procedure may not be necessary despite disrespect and violation of the right of women as narrated in one study [69].

"… *To be honest we are not always asking for consent before examination. I don't think taking consent for every medical procedure is helpful despite the scientific recommendation*" [69].

c) Stigma and discrimination

Stigma and discrimination faced by women during delivery were mentioned in nine studies. Healthcare staff stated that they got angered by conducting delivery of non-educated women and hence impede RMC [59]. Women expressed that they were being discriminated and faced disrespectful care due to poor financial status [32] [44] [46] [57] [61] [70].

"*If you don't have money, they look at you as if you are not there. They leave you like that. So, we prepare. As you know it's just about money so we prepare and then go*" [57].

Women also stated that they faced disrespect and discrimination based on country of origin [63]. In another study, health workers narrated unequal treatment due to diseases such as HIV [69].

"*For us who are from outside the country, they say 'you Zimbabweans are burdensome, you are tiresome, and you give birth a lot'. They treat us bad*" [63].

d) Physical abuse

Various forms of physical abuse were expressed by women during delivery or explained by midwives and an observer in 13 studies. The physical abuse faced by women during labour such as beating is common, associated with disrespect as mentioned in these studies, women narrated that they had to forcefully

co-operate to avoid been beaten [45] [50] [56] [57] [59] [60].

"… *They beat me enough… Yes, they beat me hard, so hard that at the end of the whole thing… I found out that if I don't push, I may end up…*" [59].

Healthcare providers had admitted that the physical abuse commonly experienced by pregnant women were associated with disrespect but assumed as a form of discipline to non-cooperative women [37] [59] [69] [71] [72].

"*When we are doing an episiotomy, the mother may want to stand and try to leave the room, in such cases, we may kick the women by scissor…*" [69].

Three observational studies also indicated how women were physically assaulted and treated with disrespect during labour [73] [74] [75].

"*Patient came in second stage of labour pushing now and then, delivered, placenta had difficulties to remove as the mother was not tolerant, the nurse slapped the women*" [73].

e) Poor psychological support

Poor psychological support during maternity care by healthcare providers was mentioned in twelve studies. Women narrated that they feel scared and worried with lack of respect in health facility during delivery because their relation was not allowed to be with them to offered psychological support [21] [45] [57] [58] [67] [76]. Some women express lack of respect with repeated virginal examinations which is painful and affect them psychologically [77].

"*The care providers hurt us psychologically. They came and did vaginal examinations repeatedly as simple as anything but it is a big trauma to us*" [77].

Some women stated that they were left unattended due to failure to follow instructions, the care received were also associated with lack of rapport by healthcare staff at various stage of delivery processes [45] [57] [60] [61] [63] [73] [77] [78].

"… *they abandoned me because I could not go up on the delivery table…*" [60].

2) Lack of privacy and confidential care

Another theme that emerged is lack of privacy and confidential care during maternity care services.

Lack of privacy during care is associated with lack of respect and was mentioned in ten studies. Women stated that the care they received compromised their privacy due to lack of partition and protective cover in the delivery rooms as they were seen by people passing by [33] [34] [49] [50] [59] [61] [69] [79].

"*Even when I was giving birth maintenance people were passing by, they were looking at me and there were no curtains. I felt embarrassed*" [34].

In two studies, it was observed that some women were left uncovered and were seen necked compromising their privacy [40] [62].

"*The nurse left the woman uncovered when she delivered; also the door was open to the extent that when other people were passing they could see her*" [62].

Lack of confidential care to women was mentioned in three studies. Women felt disrespected as their secrecy were discussed with other people even in their

presence as narrated by maternity healthcare staff [44] [45] [58].

"*… I can work on you, then come and discuss you with another person even in your earshot. There are no ethics…*" [44].

Strategies that would facilitate respectful maternity care in low and middle-income countries.

The strategies that would facilitate RMC were summarized as suggestions to the management and staff of maternity ward from the respondents. Twenty (20) studies reported some strategies to promote respect.

1) Health education to pregnant women

Health education to women during antenatal is an important strategy that would enhance RMC, it was mentioned in seven studies. To have respectful care, women stated that healthcare staff in the maternity ward should provide them with basic health education during antenatal on care expected during labour so that they get prepared [41]. In another study, women narrated that they should be given necessary health advices during labour to ease their suffering [65].

"*They are supposed to tell you what to expect, what to do when the time come. You know those few things, those few basics*" [41].

Healthcare staff narrated that for them to provide RMC, the rural un-educated pregnant women should be provided with the required information during antenatal visit, also involve them in care decisions as it eases stress of explanations during delivery and subsequent care [35] [42] [50] [51] [79].

"*As most clients come from the rural community, they may not be willing to respond to the questions they were asked. They have to be educated. The clients lack education and need to be well counselled to be compliant with what providers tell them to do.*" [50].

2) Good communication

Good communication ensures RMC and was mentioned as a strategy that would enhance respectful care in eight studies. Maternity healthcare staff stated that welcoming women during delivery with good communication create respect and comfort throughout labour [80].

"*When mother arrives, we should kindly welcome her and call her name in a respectful manner. In this way, she would feel comfortable.*" [80].

Healthcare providers also narrated that good communication with respect to pregnant women during delivery make them relax and provide the required information needed for quality care [37] [50] [52] [81] [82].

"*Good communication helps the mother to open up. If she is having a serious condition or may be in the private parts when you are not a good communicator the mother may hide that information.*" [52].

In two studies, maternity staff stated that respectful and quality care is provided when healthcare worker communicate without shouting to the clients [54] [82]. in another study, one maternity healthcare staff narrated that if client does not want something to be done during the delivery, instead of abusing the women, the provider can document what happened [74].

"*To me good quality care with respect is when a health worker talks to you well without shouting*." [54].

3) Capacity building of maternity healthcare staff on RMC

Four studies mentioned the role of staff training for successful provision of RMC. Two of the studies, indicated the need of the staff in the maternity ward to be trained especially the heads of the maternity ward for their leadership role and responsibility for improving maternity ward condition, psychological training should also be included on how to handle hostile patient [8] [44] [75]. One maternity care provider in one study narrated how she appreciated and intent to use the knowledge acquired following the training received on how to support and provide RMC to women during delivery [68].

"(*training on*) *how to handle patients who are hostile and who cannot cooperate and … how you build confidence in patients so that they become free and open up*." [75].

4) Staff motivation

Motivation to healthcare providers was mentioned in two studies and can help reduce disrespect and abuse during maternity care. Management staff narrated how good working environment and financial or other forms of commendation to maternity staff performing good quality services to clients would motivate them to provide better and more services [8]. Sometimes, good feedback from the community also motivates the healthcare providers to perform and deliver effective care to the clients [81].

"*I feel motivated because of the feedback that I get from people yeah cos* (*because*) *I could meet some people may be a mother and her baby… she will come to me and say this is your child you delivered me during that time so I feel like wow this is great*" [81].

4. Discussion

The main objective of this review was to summarize existing literature on facilitators or enablers and barriers to respectful maternity care, and also to summarize strategies that would enhance RMC. Two themes and five sub-themes were identified relating to both factors that enhance respectful maternity care and factors that inhibit RMC. The enablers to RMC reported include; good interpersonal relationship and support between women and maternity staff (good reception, information provision, promptness of care, dignified care and psychological support), and privacy and confidential care. On the other hand, the barriers to RMC include; lack of interpersonal relationship and support (poor communication, non-consented care, stigma and discrimination, physical abuse, poor psychological support), and lack of privacy and confidential care. Health education, staff capacity building on RMC, staff motivation and good communication between maternity staff and women emerged as strategies to promote RMC. To our knowledge, this review is the first qualitative synthesis that has looked into both factors that enhance and inhibit RMC including a summary of suggested

strategies that would enhance RMC in low and middle-income countries. The findings of this research have provided insight into opportunities which can possibly be used to enable governmental, non-governmental organization and other policy makers to make informed decisions to improve RMC and increase facility-based delivery and subsequently contribute to reduction in maternal mortality.

1) Factors that enhance respectful maternity care

Good interpersonal relationship and support were found to be an important factor that enhances RMC in this review. Good reception, a greeting and communication during care of pregnant women was reported to enhance good relationship and support of women by maternity healthcare workers. Women's get assured of good supportive, quality and respectful care during delivery by the first positive impression upon arrival at healthcare facility. This finding is similar to another review of literature done in developing countries where warm welcome with good communication led to maternal satisfaction during delivery [83].

Adequate information provision regarding progress of labour also created a good interpersonal relationship between women and maternity healthcare staff. This review found that information provided to women about pregnancy, labour and delivery promoted the future intention to seek facility-based care. This finding is in support of our conceptual framework which stipulate that positive experience of care associated with respect attract women for future care thereby improving maternal and neonatal outcomes. Similarly, a study done in Netherlands found good information provision during pregnancy improved maternity care services [84]. World Health Organization (WHO) also emphasizes the need to provide pregnant women with simple and culturally effective information and respectful care to promote health seeking behaviour and positive maternal outcomes [85].

The findings of this review also revealed that women regard prompt and quick interventions during care as a respect, it creates positive feeling of being treated well in healthcare facility. In one of the studies, one women alluded satisfaction with prompt care after fainting following per virginal bleeding [40]. Another study on quality maternal care indicated prompt intervention through quality care prevents bleeding during delivery thereby leading to maternal satisfaction with the care received [86].

Dignified care to women during labour and delivery is a WHO recommendation to ensure respect to women [87]. In this review, it was found that an enabling environment for women to open up and discuss their maternity care challenges with healthcare providers encouraged women to refer other women and seek similar healthcare during future pregnancies. Some women narrated crossing to country borders to seek dignified care in this review [21]. This finding is in agreement with another study on the determinants of women's satisfaction with maternal healthcare from developing countries where dignified care by

midwives was found to satisfy women and attracted more women to come for skilled care [83]. Also, similar to a review of the effectiveness of respectful care policies for women using routine intrapartum services where it indicated fewer accounts of non-dignified care to women during labour [88].

Care associated with privacy and confidentiality was another factor that can enhance RMC found in this review. Provision of adequate protective cover at doors such as curtains, maintaining confidentiality and limiting the number of people in the labour room especially non-professional staff promoted a feeling of respect and increased confidence among women. This finding is consistent with a study on drivers of maternity care in high income countries where privacy and confidential care satisfied women [89].

2) Factors that inhibit respectful maternity care

Lack of interpersonal relationship and support was found to be a factor that impede RMC. Poor communication characterizes by shouting, insult hinders women's decision to seek care in subsequent facility-based care. Poor communication associated with lack of involvement in care was classified as barrier to provision of RMC. The finding of this review is in line with our conceptual framework where poor experience and satisfaction from poor quality care will negatively affect women health seeking behaviour in subsequent pregnancies and may lead to poor maternal and newborn outcomes. Another study that explored childbirth practices and challenges for humanization of care done in two public hospitals in Brazil support our finding that poor communication to pregnant women is a barrier to RMC [90].

A study done in Peru found non-consented care during maternity care affected care decision of women [91]. Similarly, in this study non-consented care was considered as disrespect among women. Women were not happy with healthcare staff and students who did not seek permission before doing any procedure. Such practice hindered the co-operation of women throughout delivery and future care. It was worrisome that some healthcare providers who are expected to respect women stated that seeking permission to carry out procedure to women may not be necessary. This may be considered as gross violation of women right according to RMC charter [92] [93].

Reported stigma and discrimination to women during maternity care was found to affect RMC in this review. The stigma and discrimination were associated with poor education of women, poverty, differences in country of origin and due to disease such as HIV. The finding is consistent with a study on silent burden of stigmatization among Germanic ethnic group (Dutch women) in the Netherlands which found that women with low socio-economic status from a foreign country were discriminated [94]. In addition, our finding conforms with finding of secondary analysis on mistreatment of women during childbirth in healthcare facilities in developed countries where discrimination based on sociodemographic characteristics and medical conditions were found to impede RMC [95].

Physical abuse faced by women during care was found to impede RMC in this review. Many studies reported women were beaten due to lack of cooperation during painful procedures such as episiotomy without anaesthesia. This affected women's decision to visit same hospital during subsequent pregnancies. This finding conforms with another review of disrespect and abuse of women during childbirth in Nigeria where restraining of women during labour, beating and episiotomy without anesthesia were common practices in maternity ward and was found to impede RMC [18]. Also, similar to a study done in Brazil. Women who were physically and verbally abused did not report for health facility care [96]. Our findings are also in keeping with a study that examine the experience of disabled women regarding respect during maternity care in the United Kingdom, the study concluded that the respondents were dissatisfied with the care provision characterized by physical abuses [97].

Lack of companionship, painful repeated virginal examinations and abandonment of women during labour was reported in this review to affect women psychologically and subsequently impede RMC. Also similar to another study done in Thailand which found out that women's experience of emotional loneliness during labour contributed to the negative maternal and childbirth outcomes [98].

Lack of privacy and confidential care during labour was also a factor that inhibit RMC found in this review. Women were not impressed and also feel embarrassed with the care they received because they were left uncovered exposing their genitalia, maintenance staff were present in the labour room which compromised their privacy. The maternity staff were also not adhering to confidential care. These impeded their decision for subsequent care. This finding conforms with another review where women reported disclosure of their sensitive information by the healthcare staff without their consent, their privacy were impaired during care [18].

3) Strategies that would facilitate respectful maternity care

Based on the papers reviewed, the strategies that would facilitate RMC target women, management and staff of maternity ward. Health education to pregnant women on what to expect during labour at antenatal period was found to enhance RMC. Adequate knowledge could reduce stress of explanation by midwives. A qualitative evidence synthesis of respectful care during delivery has affirmed health information provision to pregnant women at various level of maternity care would enhance RMC [99]. Similarly, an interventional study on how to mitigate disrespect and abuse during labour done in Tanzania reported an increased in women's knowledge about labour and delivery with associated minimal disrespect and abuse throughout childbirth [100].

Healthcare providers in this review suggested effective communication throughout delivery process would provide comfort and satisfaction to women during care. Evidence has shown that improving effective communication between pregnant women and healthcare staff would enhance RMC [101]. In addi-

tion, study done in Tanga region, Tanzania, found effective communication reduced disrespect and abuse to women by 66% [102].

Capacity building of maternity healthcare staff on RMC including how to offer psychological support and handle hostile patients has proven to improve RMC. Evidence has shown training midwives on respectful and effective maternity care, and good rapport with women improves provision of dignified services [68] [79].

Staff are motivated by a good working environment, financial and non-financial benefits. It is evident that financial benefits and timely promotion can enhance nurses' work motivation which can enhance provision of RMC [103].

4) Strengths

Choosing qualitative studies was best for this review in view of the objectives which target studies that explore the experiences of women during labour, why and how healthcare staff mistreat women during delivery. We included studies from multiple respondents (women, maternity healthcare staff, husband) to have diverse experiences about the topic of this study and also to achieve triangulation of findings.

The robust and exhaustive literature search from multiple databases in this review provided optimal searches and guarantee adequate and efficient coverage of available studies. Screening of articles was independently conducted by two candidates and aimed at minimizing selection bias. Majority (91%) of the included studies scored high (CASP score) with no study scored low.

5) Limitations

Despite ensuring quality review by following strict criteria, there may be possibility of some studies missed however this is unlikely because of robust and exhaustive literature searched. Considering the short duration for this review, if quantitative component was added it may have identified other enablers and barriers to RMC. About half (22) of the included studies for this review was from East African region, West Africa (10) and only six studies from Asia. Therefore, socio-cultural variations may vary between and within countries and may affect generalizability of findings.

6) Implications for policy and practice

This review showed that, women faced various forms of disrespect and abuses while seeking maternity care services and may deter them from facility-based care which can have an overall effect on the global target of reducing maternal and child mortality. These disrespect and abuses are due to lack of staff training on RMC services, attitude of the maternity care staff, health system failure among others.

Therefore, the following recommendations are made:

- Government/policy makers should provide an enabling environment for maternity healthcare staff by training on how to deliver effective RMC services including how to handle women and provide psycho-social support during labour, adequate manpower, financial and non-financial motivation.

- Health workers should provide supportive environment for pregnant women by providing adequate information and involvement in decision during care, provision of health education to women on what to expect during labour.
- Families/communities should be oriented on how to respond and report any act of disrespect and abuse faced by women to the appropriate authorities in the existing systems.

7) Implications for research

The review focused on only qualitative studies in low and middle-income countries with few studies (six) from Asian continent. Therefore, more research is needed in all regions of low and middle-income countries for generalizability of findings and enables us to achieve global target of reducing maternal mortality. Review of quantitative studies also needed to know the burden of RMC in the region.

It would also be interested in future research to further explore reason why maternity healthcare staff not providing respectful maternity care for possible solution to the growing disrespect and abuse during maternity care services.

5. Conclusion

This review has highlighted various enablers and barriers to RMC. Good interpersonal relationship, privacy and confidential care facilitate positive experience. However, women faced different forms of barriers to receiving dignified care during maternity care ranging from provider behavioural barriers, working environmental constraints and health system challenges which affect health seeking behaviour. Such barriers could affect the global target of reducing maternal mortality especially in low and middle-income countries. Therefore, ensuring dignified and respectful care through capacity building of health workers on RMC, improving communication between women and workers, and improving working environment could contribute to an increase in health seeking bahaviors, consequently contributing to the reduction of maternal mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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