ISSN 2664-8075 (Print) & ISSN 2706-5774 (Online)
**South Asian Research Journal of Applied Medical Sciences**
*Abbreviated Key Title: South Asian Res J App Med Sci*

**| Volume-7 | Issue-6 | Nov-Dec- 2025 |** **DOI: https://doi.org/10.36346/sarjams.2025.v07i06.006**

**Original Research Article**

# Implementation of Nurses' Asthma Management Practice Check-List: Quasi Experimental Study

Chukwu Chinenye Chituru Chichi[1]*

[1]Faculty of Nursing Sciences Madonna University Nigeria, EleleCampus

***Corresponding Author:** Chukwu Chinenye Chituru Chichi
Faculty of Nursing Sciences Madonna University Nigeria, EleleCampus

**Article History**
**Received:** 09.10.2025
**Accepted:** 28.11.2025
**Published:** 18.12.2025

**Abstract**: Nurses' asthma management practice check list was developed to closed asthma management gap. The implementation of nurses' asthma management practice Check-list was guided by educational program to ensure adequate knowledge and reinforcement of prior learning. This study adopted Quasi-experimental one group pre-post research design in University of Port Harcourt Teaching Hospitals Rivers State, Nigeria with a Sample size of 52 nurses form the population of 103 nurses who are directly involved in asthma management, which is 50% of the population. Purposive sampling technique was utilized in this study. Check-list was used to collect data to ascertain the level of competency in asthma management practices of the participants pre and post educational program. The findings of the implementation pre/post educational program indicate good practice of asthma management post- test with 82% of the participants being able to complete their task as against 37% pre- test. The study concluded that asthma management was enhanced using check list and the use of educational program as intervention increased knowledge of asthma management. The study strongly recommended the concept of the use of educational program in implantation of check-list in nursing practice.

**Keywords:** Asthma, Management practice, nurses, implementation, checklist.

## INTRODUCTION

Asthma is a complex airway disease with no known etiology. Management of asthma is complex and requires technical application of skills especially during asthma crisis and asthma exacerbation. Care must be taken to ensure asthma patient receive optimum care that will enhance positive outcome. Implementation of asthma management check list was done to assess the effectiveness of asthma management practice using a checklist. Check list in clinical nursing practice serves as a guide in management of disease conditions. Checklists are common in nursing practice, and can be an effective tool to improve patient care reducing morbidity and mortality. The development and implementation of nursing checklists can be challenging, complex and resource-demanding. In order to reduce ambiguity of check list implementation, educational program was used as a guide. Prausnitz *et al*., (2023) suggested that Learning health systems require rapid-cycle research and nimble implementation processes to maximize innovation across disparate specialties and operations. Huybrechts *et al*., (2021) asserted that Experts develops implementation and evaluation models and frameworks to guide research-implementation and evaluation continuum. Check –list implementation by the participants for each individual patient was across morning, afternoon and evening shift. Nilsen (2015) stated that each model and framework in check-list development should be developed to aid in the planning, implementation, and/or evaluation of healthcare innovations and each requires substantial detail, resources, and time for completion and iterative updating. Nurses' Asthma Management check-list contains four (4) sections, section A: inhaler administration with Eight (8) practice areas Section B:nebulizing technique with sixteen (16) practice areas, Section C: Asthma Education on self-management, seventeen practice areas Section D: Nurse patient partnership with six (6) practice areas. An evidenced-based framework is needed to provides not only an explanatory approach but also allows the researcher to prioritize those variables that are important to achieve implementation success. This means that such a framework should point out a pathway that identifies the most important phases and steps throughout the implementation process and highlights the main constructs that, within each phase, need to be defined, acted upon, and reflected upon. The Check list was implemented by the researcher pre and post educational

program in the clinical areas with the code of ND: not done with weighting scale of 0, PA: partial done with weighting scale of 1 and CD: completely done with weighting scale of 2.

**Research Objectives**

1. Assess the nurses' utilization of Nurses' asthma management practice check-list pre-educational program.
2. Assess the nurses' utilization of Nurses' asthma management practice check-list post educational program.
3. Determine the difference in nurses' utilization of Nurses' asthma management practice check-list pre/post educational program.

# METHODOLOGY

**Research Design:** This study adopted Quasi-experimental one group pre-post research design.

**Setting:** University of Port Harcourt Teaching Hospitals Rivers State, Nigeria.

**Sample Size and Sampling Technique:** Purposive sampling technique was utilized with the sample size of 52 nurses form the population of 103 nurses which is 50% of the population. The participants were intentionally selected based on specific characteristics relevant to this study.

**Instrument for Data Collection:** Check-list was used to collect data to ascertain the level of competency in asthma management practices of the respondents pre and post educational program.

**Data Analysis:** Data were analysed using descriptive statistics such percentage and frequency.

**Ethical and Research Approvals**

This study was approved and authorized by the institutional research and ethics committee board, and all participating nurses provided signed informed consent after proper explanation of what is expected in the study. All ethical issues were strictly adhered to.

# RESULTS

**Table 1.2: Frequency and percentages of nurses' utilization of Nurses' asthma management practice check-list pre-educational program**

| Ashma Mgt. | Practice of asthma management | Pre-test (n = 52) | | |
|---|---|---|---|---|
| | | ND | PD | DC |
| Inhaler Technique | 1. Shake the inhaler | 52 | - | - |
| | 2. Instruct patient to lift the chin slightly | 52 | - | - |
| | 3. Instruct patient to breath out slowly and fully | 52 | - | - |
| | 4. Place inhaler mouthpiece in the mouth and seal the lips around the mouthpiece | - | 52 | - |
| | 5. Puff the inhaler | - | - | 52 |
| | 6. Instruct the patient to hold the breath and then breath out | 52 | - | - |
| | 7. Wait 30-60 minute before the next puff | 52 | - | - |
| | 8. Patient to rinse the mouth with water | 52 | - | - |
| Nebulizing Technique | 1.Ensure there is current depending on the type of nebulizer | 25 | 2 | 25 |
| | 2.Ensure nebulizing breathing mask is properly clean | | | 52 |
| | 3.Wash hands with soap and water and dry completely | 39 | 10 | 3 |
| | 4. Attach appropriate facemask to the nebulizer | 14 | | 38 |
| | 5. Put prescribed medication in nebulizer cup diluting with appropriate amount of solution | - | - | 52 |
| | 6.Let patient sit in upright position | 7 | - | 45 |
| | 7.Check the pulse rate and respiration rate | 26 | 16 | 10 |
| | 8.Power on the nebulizer | - | - | 52 |
| | 9.Place the breathing mask over the patient's mouth and nose and fasten at back of the head or ear depending on the type of nose mask | 52 | | |
| | 10.Instruct patient to inhale spray from the nebulizer | 52 | - | - |
| | 11.Appropriate time to be on nebulizer 10-15minutes | - | - | 52 |
| | 12.Reassure the patient and put off nebulizer | | 4 | 48 |

| | | | | |
|---|---|---|---|---|
| | 13.Remove breathing mask | 52 | - | - |
| | 14.Unplug power current. | - | - | 52 |
| | 15.Put patient in comfortable position | 6 | - | 46 |
| | 16.Clean, dry and store breathing mask in appropriate place. | - | - | 52 |
| **Asthma Education on Self- Management** | 1.Gain consent | - | - | 52 |
| | 2.Assess patients' literacy level | 9 | 3 | 40 |
| | 3.Communicate effectively | - | 12 | 40 |
| | **Educate patient on**:<br>4.Understanding what asthma is | - | 50 | 2 |
| | 5.Causes of asthma | - | 38 | 14 |
| | 6. Asthma symptom recognition | - | 14 | 38 |
| | 7.Asthma symptom control | 20 | 21 | 11 |
| | 8.Trigger control | | 32 | 20 |
| | 9. Improving communication with the nurse | 38 | 10 | 4 |
| | 10.Making changes in lifestyle to avoid triggers | - | - | 52 |
| | 11. Positioning during sleep to avoid nocturnal asthma | 47 | 5 | - |
| | 12. Avoidance of trigger | - | - | 52 |
| | 13. Asthma medication/ medication adherence | 7 | 45 | |
| | 14. On how to use the nebulizer | 6 | 34 | 12 |
| | 15 On how to use the inhaler | - | 52 | |
| | 16. Educate patient on personalized action plan using a copy of action plan | 52 | - | - |
| | 17.Educate patient on asthma control test using asthma control test form | 52 | - | - |
| **Initiate Nurse-patient/ Family Partnership** | 1.Define nurse-patient/family partnership | 52 | - | - |
| | 2. Discussion with the patient on the need for the partnership | 52 | - | - |
| | 3.Assess patient's communication needs/ level of literacy | 52 | - | - |
| | 4. Set meeting goals | 52 | - | - |
| | 5.Meeting with patients and significant others | 52 | - | - |
| | 6.Scheduling date/time for asthma education/ therapy techniques for patient<br>and significant others | 52 | - | - |
| | **Total Percentage** | **1128(46%)** | **400(16%)** | **916(37%)** |

**ND:** Not Done, PD: Partially Done, DC: Done Completely

Table 1.1 above shows findings on nurses' utilization of Nurses' asthma management practice check-list pre-educational program. The findings on Inhaler technique indicates that: all the participants did not shake inhaler before administration, this indicates poor practice. Also, none of the participants instructed patients to breath in before inhaler administration this also indicates poor practice. All the participants were able to puff the inhaler, this indicates good practice. None of the participants offered water or instructed patient to rinse mouth after inhaler administration, this indicates poor practice. Nebulizing technique: all the participants were able to put prescribed medication in nebulizer cup diluting with appropriate amount of solution this indicate good practice. Only 1/3 of the participants checked patients pulse rate and respiration rate this indicates poor practice. None of the participants Instructed patient to inhale spray from the nebulizer, this also indicates poor practice. Asthma education on self-management: only insignificance number of the participants assessed patients' literacy level prior to asthma education on self-management this indicates moderate practice. Majority of the participants could not educate patient on sleeping positions to avoid nocturnal asthma, this also indicates poor practice. Significant number of the respondents could not educate patient on Asthma medication/ medication adherence.

Initiate nurse patient/ family partnership: all the participants could not define nurse-patient/family partnership, this indicates poor practice. All the participants could not discuss with the patient on the need for the partnership, this indicates poor practice. Also, all the participants could not schedule date/time for asthma education/ therapy techniques for patient.

**Educational Program on Nurses' Utilization of Nurses' Asthma Management Practice Check-List**

Two days educational program to educate participants on the use of Nurses Asthma Management practice check-list.

**Day One**

**1st Implementation of Nurses' Asthma Management Practice Checklist – List**

Inhaler technique and nebulizing technique was discussed and demonstrated based on the area of practice on Nurses' asthma management practice check-list.

**Day 2**

Asthma Education on self-management and Nurse Patient Family Partnership was discussed based on Nurses' asthma management practice check-list.

2nd **Implementation of Nurses' Asthma Management Practice Checklist – List**

**Table 1.2: Frequency and percentages of the nurses' utilization of Nurses' asthma management practice check-list post- educational program**

| Ashma Mgt. | Practice of asthma management | Post-test (n = 52) | | |
|---|---|---|---|---|
| | | ND | PD | DC |
| **Inhaler Technique** | 1. Shake the inhaler | - | - | 52 |
| | 2.Instruct patient to lift the chin slightly | - | - | 52 |
| | 3. Instruct patient to breath out slowly and fully | 2 | | 50 |
| | 4. Place inhaler mouthpiece in the mouth and seal the lips around the mouthpiece | - | 52 | - |
| | 5. Puff the inhaler | - | - | 52 |
| | 6.Instruct the patient to hold the breath and then breath out | 52 | - | - |
| | 7.Wait 30-60 minute before the next puff | 31 | - | 21 |
| | 8.Patient to rinse the mouth with water | 16 | | 36 |
| **Nebulizing Technique** | 1.Ensure there is current depending on the type of nebulizer | 25 | 2 | 25 |
| | 2.Ensure nebulizing breathing mask is properly clean | - | - | 52 |
| | 3.Wash hands with soap and water and dry completely | - | 4 | 48 |
| | 4. Attach appropriate facemask to the nebulizer | 14 | | 38 |
| | 5. Put prescribed medication in nebulizer cup diluting with appropriate amount of solution | - | - | 52 |
| | 6.Let patient sit in upright position | - | 3 | 49 |
| | 7.Check the pulse rate and respiration rate | 12 | 1 | 39 |
| | 8.Power on the nebulizer | - | - | 52 |
| | 9.Place the breathing mask over the patient's mouth and nose and fasten at back of the head or ear depending on the type of nose mask | - | - | 52 |
| | 10.Instruct patient to inhale spray from the nebulizer | 16 | - | 36 |
| | 11.Appropriate time to be on nebulizer 10-15minutes | - | - | 52 |
| | 12.Reassure the patient and put off nebulizer | - | 1 | 51 |
| | 13.Remove breathing mask | - | - | 52 |
| | 14.Unplug power current. | - | - | 52 |
| | 15.Put patient in comfortable position | - | - | 52 |
| | 16.Clean, dry and store breathing mask in appropriate place. | - | - | 52 |
| **Asthma Education on Self- Management** | 1.Gain consent | - | - | 52 |
| | 2.Assess patients' literacy level | - | 11 | 41 |
| | 3.Communicate effectively | - | 2 | 50 |
| | **Educate patient on**:<br>4.Understanding what asthma is | - | - | 52 |
| | 5.Causes of asthma | - | - | 52 |
| | 6. Asthma symptom recognition | - | - | 52 |
| | 7.Asthma symptom control | - | 2 | 50 |
| | 8.Trigger control | - | 3 | 49 |
| | 9. Improving communication with the nurse | 12 | - | 40 |
| | 10.Making changes in lifestyle to avoid triggers | - | - | 52 |
| | 11. Positioning during sleep to avoid nocturnal asthma | - | 31 | 21 |

| | | | | |
|---|---|---|---|---|
| | 12. Avoidance of trigger | 2 | 14 | 36 |
| | 13. Asthma medication/ medication adherence | - | 13 | 39 |
| | 14. On how to use the nebulizer | -- | 14 | 38 |
| | 15 On how to use the inhaler | | 13 | 39 |
| | 16. Educate patient on personalized action plan using a copy of action plan | 13 | 19 | 20 |
| | 17.Educate patient on asthma control test using asthma control test form | - | 5 | 47 |
| **Initiate Nurse-patient/ Family Partnership** | 1.Define nurse-patient/family partnership | - | 8 | 44 |
| | 2. Discussion with the patient on the need for the partnership | 6 | 4 | 42 |
| | 3.Assess patient's communication needs/ level of literacy | 2 | | 50 |
| | 4. Set meeting goals | | 24 | 28 |
| | 5.Meeting with patients and significant others | 16 | | 36 |
| | 6.Scheduling date/time for asthma education/ therapy techniques for patient and significant others | - | - | 52 |
| | **Total Percentage** | **219(9%)** | **226(9%)** | **1999(82%)** |

Analysis of the table 1.2 above shows general improvement in all sections of asthma management practice, indicating good practice generally. Inhaler technique: all the participants were able to shake inhaler before administration post educational program this indicates good practice. Also, all the participants instructed patients to breath in before inhaler administration this also indicates good practice. However, post educational training, none of the participants instructed patient to hold breath and then breath out during inhaler administration, this indicates poor practice.

**Nebulizing Technique:**

All the participants were able to put prescribed medication in nebulizer cup diluting with appropriate amount of solution this indicate good practice. Only 2/3 of the participants checked patients pulse rate and respiration prior to nebulizing post educational program, this indicates average practice.

**Asthma Education on Self-Management:**

Significance number of the participants ¾ were able to assessed patients' literacy level prior to asthma education on self-management this indicates moderate practice. All the participants were able to educate patients on what asthma is, this indicates good practice. Insignificant number of participants could not educate patient on avoidance of trigger, this also indicate good practice. More than half of the participants could not educate patients on sleeping positions to avoid nocturnal asthma post educational program, this indicates moderate practice.

**Initiate Nurse Patient/ Family Partnership:**

Insignificant number of participants could not define nurse-patient/family partnership during asthma education, this indicates good practice. More than half of the participants were able to discuss with patients on the need for the partnership, this indicates good practice. Also, all the participants were able to schedule date/time for asthma education/ therapy techniques for patient. Post educational program, this indicates good practice.

**Table 1.3 Frequency and percentages of the nurses' utilization of Nurses' asthma management practice check-list pre/ post- educational program**

| Ashma Mgt. | Ashma Management Practice | Pre-test (n = 52) | | | Post-test (n = 52) | | |
|---|---|---|---|---|---|---|---|
| | | ND | PD | DC | ND | PD | DC |
| **Inhaler Technique** | 1. Shake the inhaler | 52 | - | - | - | - | 52 |
| | 2. Instruct patient to lift the chin slightly | 52 | - | - | - | - | 52 |
| | 3. Instruct patient to breath out slowly and fully | 52 | - | - | 2 | | 50 |
| | 4. Place inhaler mouthpiece in the mouth and seal the lips around the mouthpiece | - | 52 | - | - | 52 | - |
| | 5. Puff the inhaler | - | - | 52 | - | - | 52 |
| | 6. Instruct the patient to hold the breath and then breath out | 52 | - | - | 52 | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 7. Wait 30-60 minute before the next puff | 52 | - | - | 31 | - | 21 |
| | 8. Patient to rinse the mouth with water | 52 | - | - | 16 | | 36 |
| **Nebulizing Technique** | 1.Ensure there is current depending on the type of nebulizer | 25 | 2 | 25 | 25 | 2 | 25 |
| | 2.Ensure nebulizing breathing mask is properly clean | | | 52 | - | - | 52 |
| | 3.Wash hands with soap and water and dry completely | 39 | 10 | 3 | - | 4 | 48 |
| | 4. Attach appropriate facemask to the nebulizer | 14 | | 38 | 14 | | 38 |
| | 5. Put prescribed medication in nebulizer cup diluting with appropriate amount of solution | - | - | 52 | - | - | 52 |
| | 6.Let patient sit in upright position | 7 | - | 45 | - | 3 | 49 |
| | 7.Check the pulse rate and respiration rate | 26 | 16 | 10 | 12 | 1 | 39 |
| | 8.Power on the nebulizer | - | - | 52 | - | - | 52 |
| | 9.Place the breathing mask over the patient's mouth and nose and fasten at back of the head or ear depending on the type of nose mask | 52 | | | - | - | 52 |
| | 10.Instruct patient to inhale spray from the nebulizer | 52 | - | - | 16 | - | 36 |
| | 11.Appropriate time to be on nebulizer 10-15minutes | - | - | 52 | - | - | 52 |
| | 12.Reassure the patient and put off nebulizer | | 4 | 48 | - | 1 | 51 |
| | 13.Remove breathing mask | 52 | - | - | - | - | 52 |
| | 14.Unplug power current. | - | - | 52 | - | - | 52 |
| | 15.Put patient in comfortable position | 6 | - | 46 | - | - | 52 |
| | 16.Clean, dry and store breathing mask in appropriate place. | - | - | 52 | - | - | 52 |
| **Asthma Education on Self-Management** | 1.Gain consent | - | - | 52 | - | - | 52 |
| | 2.Assess patients' literacy level | 9 | 3 | 40 | - | 11 | 41 |
| | 3.Communicate effectively | - | 12 | 40 | - | 2 | 50 |
| | **Educate patient on**:<br>4.Understanding what asthma is | - | 50 | 2 | - | - | 52 |
| | 5.Causes of asthma | - | 38 | 14 | - | - | 52 |
| | 6. Asthma symptom recognition | - | 14 | 38 | - | - | 52 |
| | 7.Asthma symptom control | 20 | 21 | 11 | - | 2 | 50 |
| | 8.Trigger control | | 32 | 20 | - | 3 | 49 |
| | 9. Improving communication with the nurse | 38 | 10 | 4 | 12 | - | 40 |
| | 10.Making changes in lifestyle to avoid triggers | - | - | 52 | - | - | 52 |
| | 11. Positioning during sleep to avoid nocturnal asthma | 47 | 5 | - | - | 31 | 21 |
| | 12. Avoidance of trigger | - | - | 52 | 2 | 14 | 36 |
| | 13. Asthma medication/ medication adherence | 7 | 45 | | - | 13 | 39 |
| | 14. On how to use the nebulizer | 6 | 34 | 12 | -- | 14 | 38 |
| | 15 On how to use the inhaler | - | 52 | | | 13 | 39 |
| | 16. Educate patient on personalized action plan using a copy of action plan | 52 | - | - | 13 | 19 | 20 |
| | 17.Educate patient on asthma control test using asthma control test form | 52 | - | - | - | 5 | 47 |
| | 1.Define nurse-patient/family partnership | 52 | - | - | - | 8 | 44 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Initiate Nurse-patient/ Family Partnership** | 2. Discussion with the patient on the need for the partnership | 52 | - | - | 6 | 4 | 42 |
| | 3.Assess patient's communication needs/ level of literacy | 52 | - | - | 2 | | 50 |
| | 4. Set meeting goals | 52 | - | - | | 24 | 28 |
| | 5.Meeting with patients and significant others | 52 | - | - | 16 | | 36 |
| | 6.Scheduling date/time for asthma education/ therapy techniques for patient and significant others | 52 | - | - | - | - | 52 |
| | **Total Percentage** | **1128 (46%)** | **400 (16%)** | **916 (37%)** | **219 (9%)** | **226 (9%)** | **1999 (82%)** |

Table 1.3 above indicates good practice of asthma management post- test with 82% of the participants being able to complete their task as against 37% pre- test. The table also shows that post- test only 9% of the participants cannot practice asthma management as against 46% pre- test this indicates good practice.

## DISCUSSION

The report of the study on the implementation of Nurses' Asthma Management checklist describes the tools, framework, adoption and evaluation used. Educational program as concise intervention research-to-implementation planning guided this study. The Implementation of this check-list integrated core concepts of existing frameworks and utilized a novel concept of using educational program to enhance knowledge and boast prior learning on the subject matter hence empowering participants with adequate skills that will benefit the end-users which is the patient, This is in line with the findings of Huybrechts *et al*., (2021) which stated that checklist format promotes end-user acceptability, uptake, and completion, which will anticipate and increase operational implementation of evidence-based innovation.

The initial use of the check-list pre- educational program yielded low percentage of success as most nurses had poor asthma management practice in most of the domain. But after educational program, most of the nurses had good asthma management practice. This can be attributed to the concept of using educational program to guide implantation of check list. This is in line with findings of Prausnitz (2023) which stated that the creation of a short, pragmatic implementation processes may substantially improve uptake and implementation efficiency. Educational program in nursing do not only impact knowledge but act as reinforcement of prior learning. This is evidentt in the findings post educational program with 82% of the participants being able to complete their task as against 37% pre- test. As a result of applying the check-list developed in this study, nurses' asthma management practice statistically had significant amelioration.

## CONCLUSION

Nurses' Asthma Management Practice checklist is a clinical tool that is evidence -based, produced to guide nurses' asthma management practice. The development and utilization of checklist led to proper asthma management practice among the nurses in the settings. The check-list was implemented by the researcher pre and post asthma educational program. The findings on its application indicates that asthma management practice among nurses significantly improve post educational program.

## REFERENCES


- Bridgeman M. B & Wilken L. A. (2021). Essential Role of Pharmacists in Asthma Care and Management. J Pharm Pract. 34(1):149-162.https://doi.org /10.1177/08971 90020927274.
- Hall, C., Nici, L., Sood, S., ZuWallack, R., & Castro, M. (2017). Nonpharmacologic Therapy for Severe Persistent Asthma. *Journal of Allergy Clinical Immunology Practice*, 5(4),928-935. https://doi.org/10.1016/j.jaip.2017.04.030.
- Huybrechts ,I,, Declercq ,A., Verté, E., Raeymaeckers, P., Anthierens ,S. (2021). The Building Blocks of Implementation Frameworks and Models in Primary Care: A Narrative Review. *Front. Public Health* 9:675171. doi: 10.3389/fpubh.2021.675171Morris (2022), Asthma Treatment & Management. *Medscape*. https://www.medscape.com/article/296301-treatment
- Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. ImplementationSci **10**,53https://doi.org/10.1186/s13012-015-0242-0
- Ozoh, O.B., Ayuk, A.C., Ukwaja, K.N., et al. (2019) Asthma Management and Control in Nigeria: The Asthma Insight and Reality Nigeria (AIRNIG) Study. Expert Review of Respiratory Medicine, 13, 917-927.

- Prausnitz, S., Altschuler. A., Herrinton, L.J., Avins, A.L., Corley, D.A(2023). The implementation checklist: A pragmatic instrument for accelerating research-to-implementation cycles. Learn Health Syst ;7(3):e10359. doi: 10.1002/lrh2.10359.
- Reese, C (2017), "Implementation of a Daily Checklist to Improve Patient Safety and Quality of Care in a Pediatric Intensive Care Unit". Dissertations. 655. https://irl.umsl.edu/dissertation/655
- Schuers, M., Chapron, A., Guihard, H, Bouchez, T., & Darmon, D. (2019). Impact of non- drug therapies on asthma control: A systematic review of the literature. *European Journal of General Practice*, 25(2), 65-76. https://doi.org/10.1080/13814788.2019.1574742.
- Shimazaki K, Ota K, Niimi Y. Developing a self-checklist of staff development behavior for associate nurse unit managers using the Delphi method. Nurs Health Sci. 2021 Mar;23(1):195-207. doi: 10.1111/nhs.12798. Epub 2020 Dec 27. PMID: 33295081.
- Song, P., Adeloye, D., Salim, H., Dos- Santos, J.P., Campbell, H., Sheikh, A., & Rudan, I. (2022). Global, regional, and national prevalence of asthma in 2019: a systematic analysis and modelling study. *J Glob Health*. https://doi.org/10.7189/jogh.12.04052.
- The Global Asthma Report. (2022). *The Global Burden of Asthma.* http://globalasthmareport. org/burden/burden.php
- WHO (2020). Asthma factsheet, https://www.who.int/news-room/fact-sheets/detail/asthma
- Public Health Agency of Canada (2022, April 13). *How healthy is Canada.* =-https://www.canada.ca/en/public-health.html
- Federal Ministry of Health (2022, May 5). The Honourable Minister of Health Press release to commemorate the 2022 World Asthma Day, Closing gap in asthma care. https://www.health.gov.ng/index.php?option=com_k2&view=item&id=848:the-honorable-minister-of-health-press-release-to-commemorate-the-2022-world-asthma-day-closing-gaps-in-asthma-care#:~:text=Cancer%20 Control%20 Programme-,THE%20HONORABLE%2 0MINISTER% 20OF%20HEALTH% 20PRESS%20RELEASE% 20TO%20COMMEMORATE %20THE,CLOSING% 20 GAPS%20IN%20ASTHMA%20CARE&text=Nigeria% 20joined%20the %20rest%20of,to%20commemorate%20World%20Asthma%20Day.
- Center for Disease Control and Prevention. (2022, December 13). *Most Recent National Asthma Data.* https://www.cdc.gov/asthma/most_recent_national_asthma_data.htm