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Statistical Analysis on The Number of Monthly Paediatric Admission (A Case Study of Specialist Hospital Potiskum, Yobe State)

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ABSTRACT

This work is on statistical analysis on the number of paediatric admissions at specialist Hospital Potiskum, for the period of 7 years from January 2015 to December 2021. This study is to determine the general pattern of paediatric admission and estimate the number of paediatric admissions per month. Having analysed the data and we discuss the result of the analysis on the basis of observation we have made on analysis. From the data collected the trend is constructed by the Arima method which gives us. This was a retrospective descriptive over a 7-year period. the study population comprised of all children aged 1 month to 18 years that were admitted into the paediatric wards of living word mission of Specialist Hospital Potiskum, Yobe state. The age, gender, diagnoses and disease outcome of this patients, were all retrieved from the paediatric ward registers and Hospital medical records. The data were analysed using Minitab version 11.0.

Keywords: Child, Paediatric Admission, Potiskum, Yobe

INTRODUCTION

The world health organization (who) define the term health as a state of complete physical mental and social well-being and not merely the absence of disease infirmity. Also, it has been said that a healthy nation is a wealthy nation.

Although everyone can be ill at one time or the other, but it should never be adhered to reach an extreme rate as government has been putting a lot of its resources in the health sector. Children at their earlier ages (paediatric) fall sick as a result of one disease or the other which seriously effects the society. Children might have been suffering from one disease for many years, which may be due to ether the drug(s) that the patient was placed on, or the disease have not been properly diagnosed and treated which may lead to be a permanent illness on the patient. The result of analysis of this study will provide a sound basis and a vital tool in the forecasting of the paediatric admissions. For instance, if the trend is found to be increasing the government is expected to plan and make adequate funding to the health sector for the provision of the hospital material and staffing to meet the demand of the increasing paediatric admission. Each year approximately two hundred thousand children are admitted to specialist Hospital Potiskum, Yobe State incurring costs

represent 40 paediatric healthcare expenditure Potiskum. Specialist Hospital admission, like Hospital discharge, reflects a transition 0f care associated with change in care setting, healthcare providers and clinical management, there is paucity of research about Hospital admission processes and healthcare utilization preceding hospitalization. A small number of studies have compared the effectiveness of Hospital Admission beginning in emergency departments with direct admission to Hospital, defined as Hospital admission without receiving care in the Hospital emergency departments, among children hospitalized with pneumonia, children admitted directly incurred lower healthcare costs and resource utilization with no differences in adverse outcomes. We know very little about parents' perspectives differed between children admitted directly and those admitted through emergency departments.

The specialist hospital Potiskum was formally known as general hospital Potiskum was existence since 1969, but no major rehabilitation was carried out since it was built, by Governor Musa Usman of Borno State, the creation of Yobe State in 1991, it was commission with staff strength of over one hundred and fifty (150) and three fifty (350) beds capacity. With the creation of Yobe State 1991 it was upgraded to General hospital with two hundred and fifty (250) beds capacity later in 2007 the hospital was renamed to be called specialist hospital Potiskum with little growth in both staff and bed capacity, In 2019 by his Excellency the executive Governor of Yobe State Alhaji Dr. Ibrahim Gaidam.

The hospital to date has staff strength of over three hundred and fifty (350) comparison of about two hundred (200) nurses and midwives of various rank and fifteen (15) doctors (consultant) respectively.

STATEMENT OF THE PROBLEM

The major challenge in the Hospital is that patient spend much time waiting for consultation due to variation in arrival time and this led to the formation of queue. Therefore, systematic study of Paediatric Admission will assist the management of the Hospital in decision making, particularly to minimize the length of time a patient have to wait in consulting doctor and also to determine the status paediatric admission in our major health institution. These has been a major issue in the country both the state and federal duties and assignments. It has noted and reported on daily basis so as to make a clear change in the system.

JUSTIFICATION

First, we looked simply at whether or not the children chose the base paediatric admission justified or the evidentiary justification.

A second level of analysis involved looking at any potential differences in choice based on the paediatric admission of base justification or covariation status of the evidence.

All analyses of choices were conducted using ARIMA MODEL, as were other variables we examined.

RESEARCH QUESTION

1. Does the estimated number of paediatric admission cases recorded from 2015 to 2021 show a significant improvement in health care delivery?

2. Does the Numerical description of Time series of statistical analysis (Autocorrelation function (ACF),) have effect on the average number of paediatric admission cases?
3. What is the future life expectedly with the respect of paediatric admission cases?

AIM AND OBJECTIVES

The aim and objective of the research work is to determine pre balance.

A statistical analysis on the number of monthly paediatric admission and formulate a status model so as find a solution to:

1. To estimate the number of paediatric admissions cases, recode from 2015 to 2021 using Arima model.
2. To study the general pattern of the paediatric admission based on the Numerical description of time series analysis Partial Autocorrelation function (PACF).
3. To forecast or predict the number of paediatric admissions in future using Autocorrelation function (ACF)

SIGNIFICANCE OF THE STUDY

The research findings may enable and assists nongovernmental organization (i.e. World Health Organization, etc.) in getting information about the number of paediatric admissions, in particular hospital. It also helps government to know the number of children that were admitted in a month/year. It provides relevance materials for student and other researchers undertaking similar research.

SCOPE AND LIMITATION

This research is concerned with the statistical analysis of paediatric admission on monthly basis in Specialist Hospital Potiskum, Yobe State. From period of 2015 to 2021.

MOTIVATION

White and Cooley, 2018 proposed the number of monthly diagnoses in paediatric emergency departments (EDs) are attributed to infectious disease. As expected, a decrease in the total numbers of paediatric admissions and visits to the emergency department (ED) has followed worldwide. However, it is unclear whether this reduction is solely due to a decrease in transmissible infections.

Lewis & Noyes, 2015; proposed the number of paediatric admissions living with chronic conditions once considered paediatric diseases. Roughly one million children with chronic conditions transition from paediatric to child health care every year, many of these adolescents rely heavily on their parents to meet their health care needs, including scheduling and attending appointments, picking up prescriptions, and medication self-management. Those families and patients who do not feel prepared often continue to seek care with their paediatric specialists until the patients are in their early to mid-twenties, making it more difficult for them to transition

successfully to an adult health care system. There is insufficient research that focuses on common paediatric admission diagnoses and transition to child health care.

Jonas et al, 2015; There is a lack of time and resources in the outpatient setting, where a majority of transition education is traditionally provided. Using the inpatient setting was a novel idea that was proposed in our Paediatric Neurology Clinic to supplement enhance and support the transition of patients in this particular setting. Project specific goals were to enhance the transition education patients and families receive in the clinic setting by capitalizing on a unique and opportune inpatient time in the epilepsy monitoring unit and determine the feasibility of incorporating this into the standard nursing workflow. The demand for proper paediatric transition is a highlighted goal in the national initiative Healthy People 2015, which strives to increase the number of adolescent admissions receiving transition education from their physicians. The process of transition includes medical, psychological, social, and emotional processes that embody multiple dimensions of the patient.

Syverson et al., 2016; The American Academy of Paediatrics (AAP) originally published guideline recommendations for transitioning paediatric patients to adolescents' health care, including focusing on those with complex chronic conditions these initial guidelines informed the project, there has been an update guideline, which provides further details, practical guidance, and recommendations regarding the transition process with more specificity than the previous guidelines. The intricate process of health care transition takes several factors into account, comprising education of the adolescent, availability of adult providers willing to accept new young adult patients, and billing for transition education visits. While a broad guideline exists, research demonstrates the numerous inadequacies of the current health care transition processes. Poor transition has been correlated with decreased.

Michael Joseph et al, 2016; the child health care setting and potentially poorer health outcomes Overall within the regarding general number of monthly paediatric admission transition to childcare from paediatric providers, authors report significant gaps in the implementation of guidelines published to direct the transition of adolescent patients. Further studies are indicated to determine the best guidelines for clinician use when transitioning child that promote both patient and provider cooperation throughout the process. Furthermore, there are gaps in institutional policy that do not meet the needs of adolescents. While the American Academy of Paediatrics has identified guidelines to assist in developing a clinic policy, large medical centres still lack appropriately established adolescent transition clinic policies. This demonstrates the lack of consistency among various departments and institutions, which has been identified as a barrier to successful transition (Iyer and Appleton, 2017).

Weiss et al, 2017; There is a significant need for improvement in the quality of transition education provided to adolescents. Adolescent patients had decreased time to first appointment in adult care when there was less education provided, suggesting improved follow up with the implementation of adequate transition education then Repeated information exchange and the quality of the education have been associated with successful adolescent transition, which emphasizes the need for comprehensive teaching over several periods of time. Both patients and their parents identified a lack of information about adult care as a barrier to a successful transition. There has been limited information about streamlining the process of transition, but tools have been developed to promote a successful transition, including a portable medical summary integrated into the electronic health record. These tools could be better utilized in practice to improve transition practices, which is emphasized in this initiative.

James C Fackler, 2017; the Several studies revealed that many child admission providers are uncomfortable managing paediatric disease that carries into childhood, which can negatively impact the transition process for adolescents and their families, Both adult providers and paediatric providers have identified a gap between paediatric and adult health care that deserves to be addressed to improve patient outcomes, Overall, research indicates the increased need for improved adolescent education to support and foster the process of transition to child health care. The majority of adolescent transition education appears to take place during brief outpatient clinic visits. Longitudinal research is also lacking that documents long term outcomes of adolescents transitioned to adult health care and the impact of transition education (White & Cooley, 2018).

White and Cooley, 2018; proposed the number of monthly diagnoses in paediatric emergency departments (EDs) are attributed to infectious disease as expected, a decrease in the total numbers of paediatric admissions and visits to the emergency department (ED) has followed worldwide However, it is unclear whether this reduction is solely due to a decrease in transmissible infections or also by behavioural changes around healthcare utilization. For example, there have been numerous reported examples of avoidance of care due to fear of a hospital environment, which is potentially disastrous Although the overall reduction in paediatric patients seeking care has been widely reported, stratification of specific disease groups has not been performed. If avoidance of care is a significant factor, one would expect a similar reduction in admissions and ED visits due to non-infectious disease compared to visits for transmissible infectious disease. Furthermore, lockdown as intervention allows for a unique opportunity to investigate the incidence of diagnoses that are assumed, but not definitively proven, to be related to or luxated by transmissible infections.

Ladores, 2019; A filter was applied to exclude all subjects older than 18 years, admissions, ED visits on the surgery, or orthopaedic service and admissions due to standard neonatal care. After merging the 8 datasets, a list of unique diagnoses was exported, and each individual diagnosis was allocated to one of the following 4 groups: communicable infections such as respiratory tract infections; infection-related, e.g., reactive arthritis; non-communicable infections such as urinary tract. Medline Ovid, Web of Science Core Collection, and databases were searched for articles describing the effect of lockdown on paediatric clinic care.

According to the **World Health Organization (WHO), 2019;** many health systems in Europe have not yet adapted adequately to the needs of asylum-seekers, which are admitted in the month at paediatric and inefficient health care for asylum-seeking patients. The aim of this study was to assess the number of preventable hospital admissions and emergency department visits in asylum-seeking and non-asylum-seeking a number of paediatric admissions. This is a retrospective, hospital-based study. The study was done at the University Children's Hospital Basel in Switzerland. Patients admitted or presenting to the emergency department were included and split into the groups of asylum-seeking and non-asylum-seeking child patients.

Betz and Coyne, 2020; All paediatric admissions and emergency-department visits were extracted from the administrative electronic health records from 1st Jan 2019-31st Dec 2021. The main outcome was the proportion of admissions due to ambulatory-care-sensitive conditions (which refer to conditions for which paediatric admission can be prevented by early interventions in primary care) in asylum-seeking and non-asylum-seeking patients. Ambulatory-care-sensitive conditions were defined by a validated list of ICD-10 codes. The secondary objective was to assess the number of preventable emergency-department visits by asylum-seeking patients defined as proportion of visits with a non-urgent score. Ambulatory-care-sensitive conditions accounted for asylum-seeking and non-asylum-seeking patients' admissions.

Greerling et al, 2020; the monthly Paediatric admissions due to ambulatory-care-sensitive conditions are comparable in asylum-seeking and non-asylum-seeking children, suggesting few delayed presentations to ambulatory care facilities.

Iyer and Appleton, 2021; the paediatric patients in a single centre emergency department in 2021 found a higher rate of asylum-seeking children admitted for ambulatory-care-sensitive conditions compared to non-asylum-seeking children-Low integration in a primary health care system may result in delayed presentations leading to hospital admissions due to ambulatory-care-sensitive conditions. It may also result in increased numbers of presentations with non-urgent conditions at emergency departments. There is a global trend of an increase in non-urgent visits at emergency departments in high-income countries, which could also potentially be prevented by primary health care Asylum-seeking children are at risk of lacking integration into the primary health care system and may therefore have higher rates of ambulatory-care-sensitive admissions and non-urgent emergency-department presentations than their local peers.

Chouteau and Allen, 2021; the number of adolescents admission health care provider for two regions in North-West Switzerland. Basel has of the largest of the six Swiss reception centres for asylum-seeking individuals run by the Swiss State Secretary of Migration where asylum-seekers stay for a maximum of 3 months after arrival. Data of all visits at the University Children's Hospital Basel was extracted from the administrative electronic health records from 1st Jan 2020 to 31st Dec 2021. For this analysis only visits of the emergency department and admissions were included. An admission was defined as a hospital visit including at least one overnight stay. To prevent an overestimation of visits, an emergency department contact which led to admission was counted as admission and marked as admission initiated by the emergency department but not counted as additional emergency department visit. Records showing visits of multiple departments during the same admission were counted as one admission.

Mcmanus and White, 2021; proposed personal number of paediatric admitted was manually checked by an independent person. The records were locked prior to analysis in Emergency Medicine, revised in 2020, validating the monthly paediatric admission is widely used. It records from (resuscitation) to 4 (less-urgent condition) and 5 (non-urgent condition). The score is routinely assessed by trained nurses in all admitted patients presenting at the emergency department of the University Children's Hospital Basel. Non-urgent visits were defined as triage score 4 or 5 as proposed in previous studies The statistical analysis was mainly descriptive. Inferential statistics were used to describe the primary outcome parameter. The two sample Chi-square test was used to compare proportions of the primary outcome parameter, the proportion of admissions due to ambulatory-care-sensitive conditions in the asylum-seeking group compared to the non-asylum-seeking group. Confidence intervals were provided to describe the precision around the statistics using a confidence. To provide information about the completeness of the dataset, records with missing from analysis but reported as such. The study was approved by the Ethics committee of North-West Switzerland (EKNZ 2017–2021).

RESEARCH METODOLOGY

Research design

The research design is to determine the general pattern of the Paediatric Admission at Specialist Hospital Potiskum. This is to estimate the Number of Paediatric Admission per month.

Population and sample
The research design is to determine the general pattern of the Paediatric Admission at Specialist Hospital Potiskum. This is to estimate the Number of Paediatric Admission per month.

Sources of data
The data been used in this study is a secondary data which is collected from the Medical Record Department of Specialist Hospital Potiskum. The data is on monthly basis and it covers a period of 7 years (i.e 2015 to 2021).

Method of data collection
The data is secondary types of data we used in the study which is collected from medical record department that is conducted by the organization.

Method of data analysis
We used statistical analysis (Trend and composition) to analyse the data. Minitab vision 11 was used.

Advantage of moving average
a. By the use of moving average, we can calculate long time trend.
b. We can also get value that can be associated with plot.

Disadvantage of moving average
a. Moving average method is seriously affected by any abnormal and extreme value.
b. Value (Information) at the beginning and the end are lost.

Forecasting
After analysing the data, it is used to forecasting the future value using formulas which is developed to make future prediction. Forecasting is after used in business and management.

Autocorrelation function
The Autocorrelation function is the correlation between a time series with lagged version of itself. Then ACF starts at a lag of 0, which is the correlation of time series with itself, and therefore result in a correlation of 1.

Partial autocorrelation function
The partial autocorrelation function is useful in sum situation where autocorrelation function pattern is hard to determine.

ARIMA model
The ARIMA model predicts a given time series based on its own past values. It can be used for any non-seasonal series of numbers that exhibits patterns and is not a series of random events. For example, sales data from a clothing store would be a time series because it was collected over a period of time. One of the key characteristics is the data is collected over a series of constant, regular intervals.

The ARIMA model is becoming a popular tool for data scientists to employ for forecasting future demand, such as sales forecasts, manufacturing plans or stock prices. In forecasting stock prices, for example, the model reflects the differences between the values in a series rather than measuring the actual values.

$$x_t = (1 + \beta_1)x_{t-1} - \beta_1 x_{t-2} + \delta + u_1 + \alpha_1 u_{t-1}$$

Construction of an ARIMA model

Stationarize the series, if necessary, by differencing (perhaps also logging, deflating, etc.). Study the pattern of autocorrelations and partial autocorrelations to determine if lags of the stationarized series and/or lags of the forecast errors should be included the forecasting equation and check its residual diagnostics, particularly the residual Autocorrelation function (ACF) and Partial autocorrelation function (PACF) plots, to see if all coefficients are significant and all of the pattern has been explained.

Patterns that remain in the Autocorrelation function (ACF) and Partial autocorrelation function (PACF) may suggest the need for additional ARIMA terminology.

• A non-seasonal ARIMA model can be (almost)completely summarized by three numbers:

p = the number of autoregressive terms

d = the number of non-seasonal differences

q = the number of moving-average terms

• This is called an "ARIMA(p,d,q)" model

DATA PRESENTATION AND ANALYSIS

In this section we will analyse the data using statistical analysis. We will also make a decision based on the analysis.

Time series plot

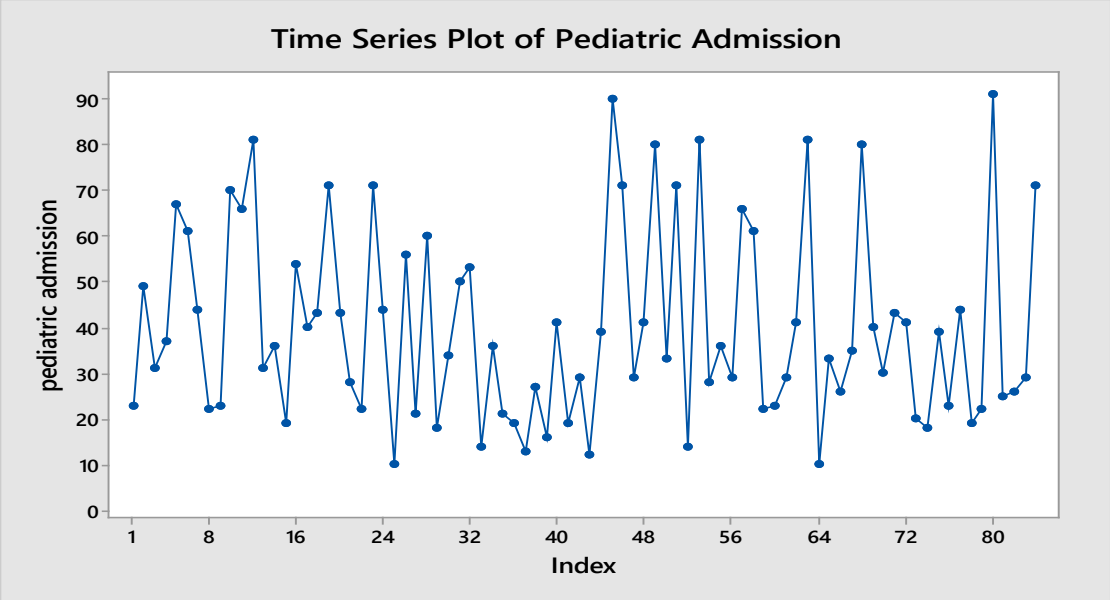

Figure 1: Time series plot of paediatric admission

The time series shows in Figure 1 reveal that the number of paediatric admission cases increases and decreases as time goes up.

Trend and forecast

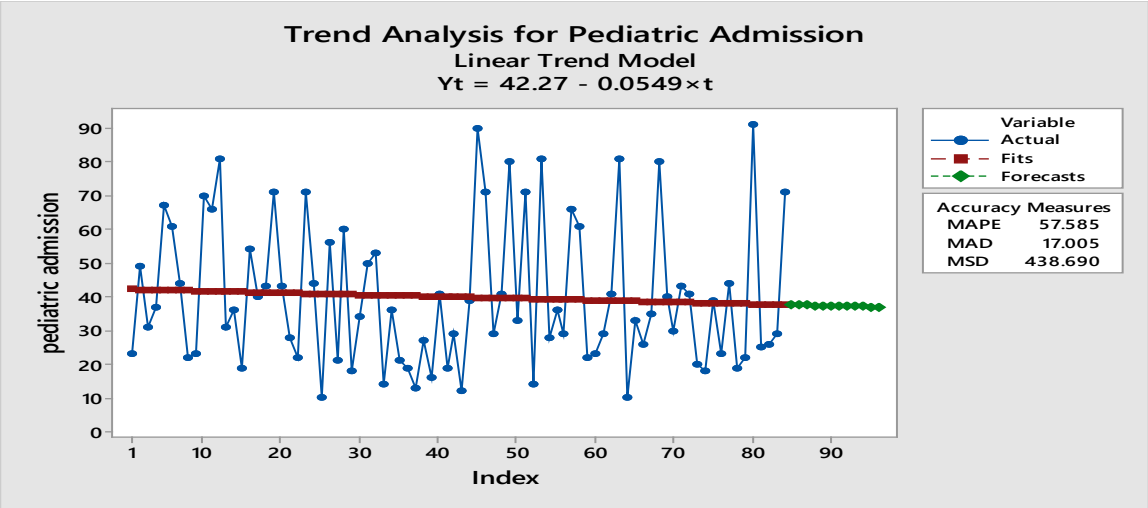

Figure 2: Trend analysis for paediatric admission

Figure 2 shows the trend pattern of the series, and it indicate that there is downward over the period. The three measures of accuracy of the fitted model are MAPE=57.585, MAD=17.005, MSD=438.690. the fitted trend equation is written as;

$$Y_t = 42.27 - 0.0549_t$$

Forecast

Period	Forecast
85	37.6079
86	37.5530
87	37.4981
88	37.4432
89	37.3883
90	37.3334
91	37.2785
92	37.2237
93	37.1688
94	37.1139
95	37.0590
96	37.0041

The forecast indicates a decrease in future cases of the number of paediatric admissions in the study area.

ACF and PACF Plot

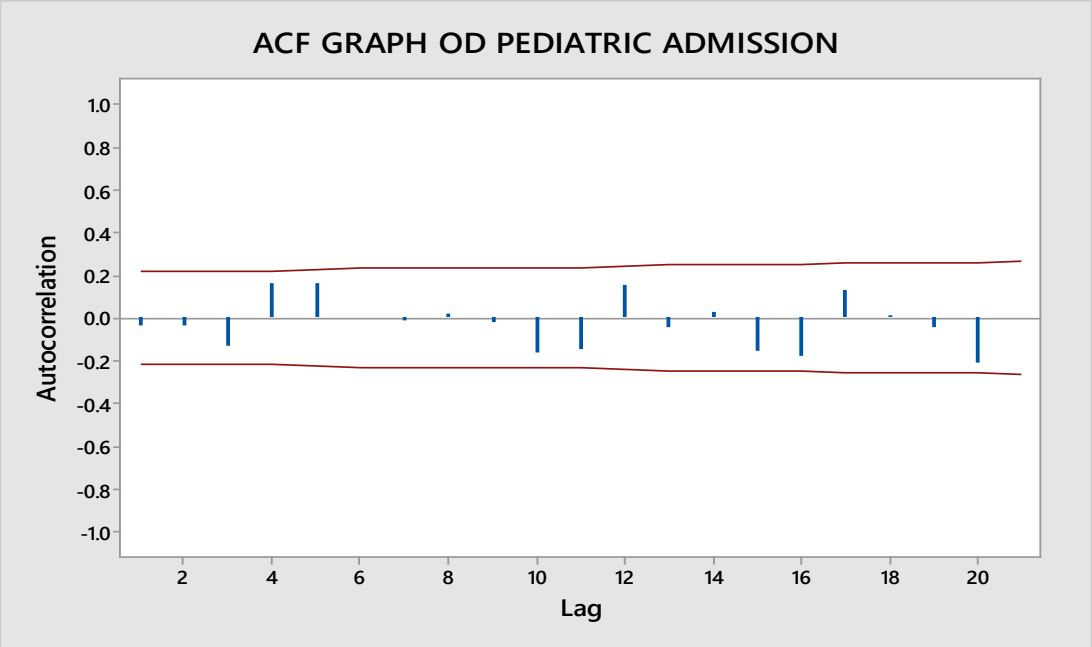

Figure 3a): ACF graph of paediatric admission

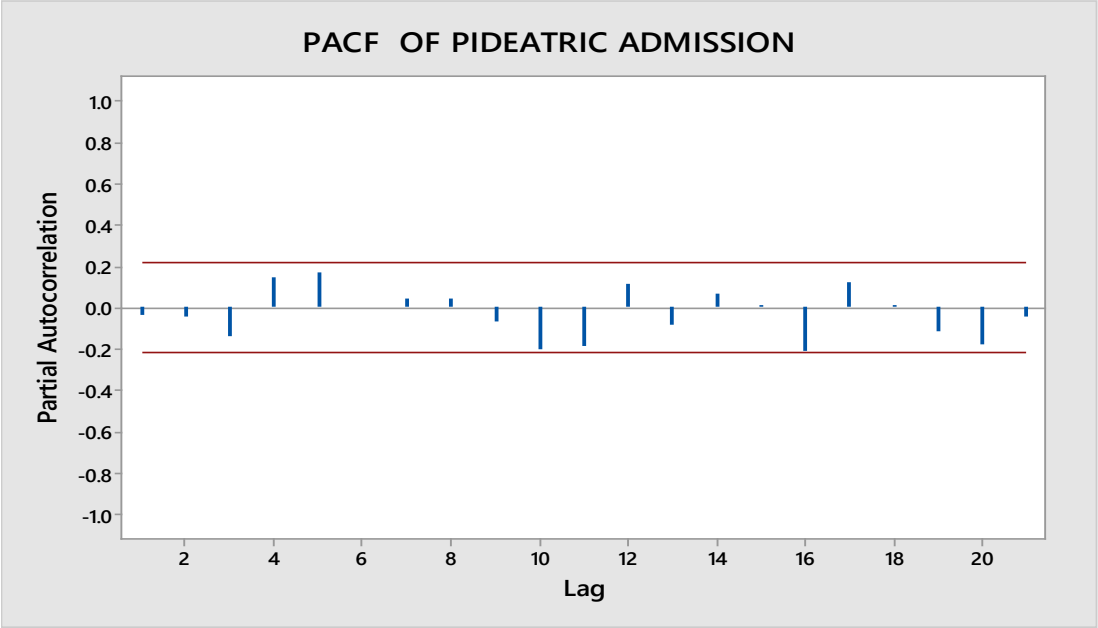

Figure 3b): PACF graph of paediatric admission

Figure 3 shows the Autocorrelation function and we observed that all spikes are within the significant limits. Similarly, the Partial Autocorrelation function in Figure 3 indicates that there are no significant spikes.

ARIMA models

ARIMA (1, 0, 0) Model: Paediatric admission

Estimates at each iteration

Iteration	SSE	Parameters	
0	37644.2	0.100	36.036
1	36944.0	-0.031	41.130
2	36940.9	-0.040	41.513
3	36940.8	-0.040	41.539
4	36940.8	-0.040	41.541

Relative change in each estimate less than 0.0010.

Final Estimates of Parameters

Type	Coef	SE Coef	T	P
AR 1	-0.0402	0.1118	-0.36	0.720
Constant	41.541	2.316	17.94	0.000
Mean	39.934	2.227		

Number of observations: 84
Residuals: SS = 36940.4 (back forecasts excluded)
MS = 450.5 DF = 82

Modified Box-Pierce (Ljung-Box) Chi-Square statistic

Lag	12	24	36	48
Chi-Square	13.7	34.6	53.1	64.6
DF	10	22	34	46
P-Value	0.186	0.043	0.020	0.036

Forecasts from period 84

		95% Limits	
Period	Forecast	Lower	Upper
85	38.6841	-2.9249	80.2931
86	39.9842	-1.6584	81.6269
87	39.9319	-1.7108	81.5746
88	39.9340	-1.7087	81.5767
89	39.9339	-1.7088	81.5767
90	39.9339	-1.7088	81.5767
91	39.9339	-1.7088	81.5767
92	39.9339	-1.7088	81.5767
93	39.9339	-1.7088	81.5767
94	39.9339	-1.7088	81.5767
95	39.9339	-1.7088	81.5767
96	39.9339	-1.7088	81.5767

ARIMA (1, 0, 0) model converged after four iterations, the Autoregressive term has a p-value that is greater than significance level, i.e p>0.05. Therefore, we concluded that the coefficient for the AR (1) is not significant. While the Ljung-Box statistics gives a significant spike at lag 24, 36, and 48. Indicating that the residuals are correlated. The AR(1) model is written as;

$$Y_t = 41.541 - 0.0402_{t-1}$$

ARIMA (1, 0, 1) Model: Paediatric admission

Estimates at each iteration

Iteration	SSE	Parameters		
0	36999.5	0.100	0.100	36.036
1	36921.6	0.079	0.121	36.773
2	36893.7	0.229	0.271	30.784
3	36879.2	0.379	0.421	24.808
4	36875.0	0.305	0.361	27.733
5	36872.8	0.348	0.403	26.039
6	36872.8	0.351	0.406	25.932
7	36872.8	0.351	0.406	25.924

Relative change in each estimate less than 0.0010.

Final Estimates of Parameters

Type	Coef	SE Coef	T	P
AR 1	0.3508	1.6215	0.22	0.829
MA 1	0.4061	1.5809	0.26	0.798
Constant	25.924	1.383	18.75	0.000
Mean	39.930	2.130		

Number of observations: 84
Residuals: SS = 36872.1 (back forecasts excluded)
MS = 455.2 DF = 81

Modified Box-Pierce (Ljung-Box) Chi-Square statistic

Lag	12	24	36	48
Chi-Square	13.3	33.7	52.1	63.9
DF	9	21	33	45
P-Value	0.150	0.039	0.019	0.033

Forecasts from period 84

95% Limits

Period	Forecast	Lower	Upper
85	38.5787	-3.2476	80.4051
86	39.4559	-2.4344	81.3462
87	39.7636	-2.1345	81.6618
88	39.8716	-2.0276	81.7707
89	39.9094	-1.9898	81.8087
90	39.9227	-1.9766	81.8220

91	39.9273	-1.9719	81.8266
92	39.9290	-1.9703	81.8282
93	39.9296	-1.9697	81.8288
94	39.9298	-1.9695	81.8290
95	39.9298	-1.9694	81.8291
96	39.9299	-1.9694	81.8291

ARIMA (1, 0, 1) model converged after seven iterations, the Autoregressive term has a p-value that it is insignificant as the p-values is greater than the significant level. Similarly, the MA (1) is also non-significant. The model is written as;

$$Y_t = 25.924 + 0.3508y_{t-1} + 0.4061y_{e-1}$$

Residual plots

Residual plot for ARIMA (1, 0, 0) Model

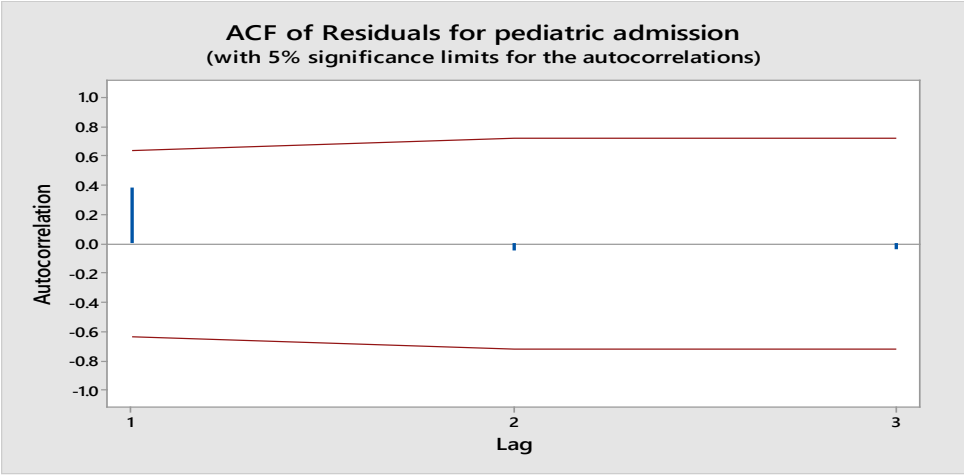

Figure 4a): ACF of Residuals for paediatric admission

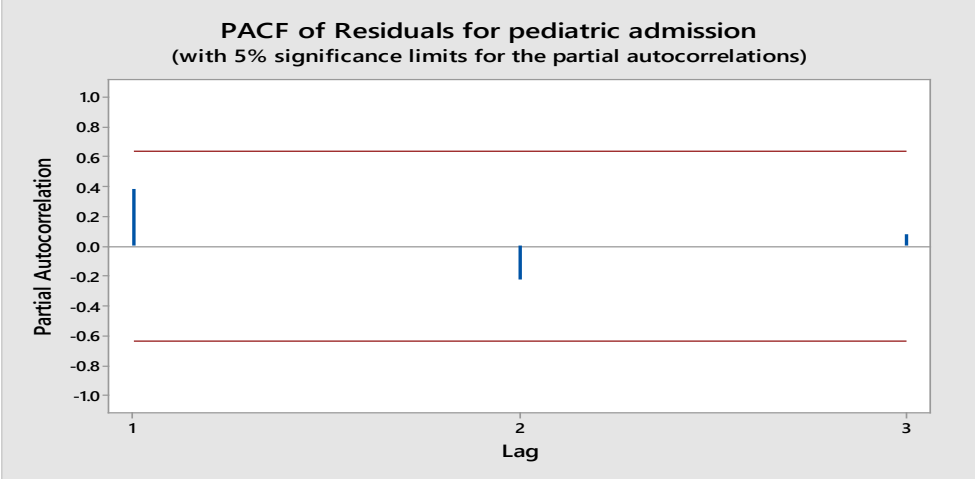

Figure 4b): PACF of Residuals for paediatric admission

The plots of residual Autocorrelation function (ACF) and Partial autocorrelation function (PACF) shows in figure 4a and 4b respectively, indicates that all residual values at various lag were settled willing tolerance interval at 95% confidence limit. This mean each residual is very small relative to its standard error and shows the existence of number significant correlation between residuals.

Residual plot for ARIMA (1, 0, 1) Model

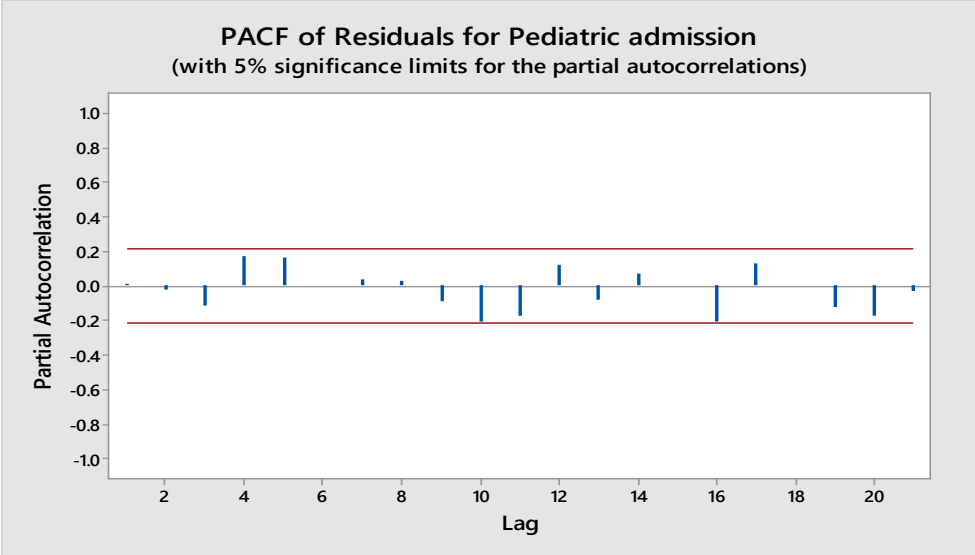

Figure 5a): PACF of Residuals for paediatric admission

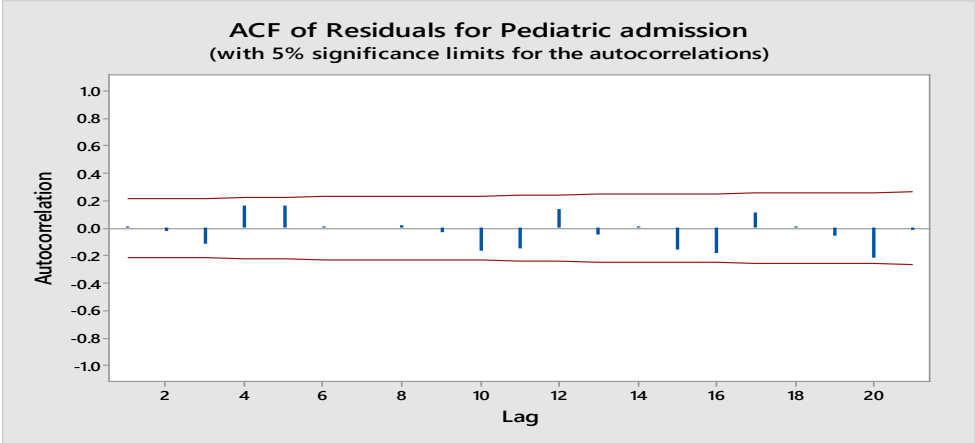

Figure 5b): ACF of Residuals for paediatric admission

The plots of residual Autocorrelation function (A C F) and Partial autocorrelation function (P A C F) shows in figure 5a and 5b respectively, indicates that no significant correlations are present, therefore we conclude that the residuals are independent.

SUMMARY, CONCLUSION AND RECCOMENDATIONS

This work exercise is Statistical analysis on the number of monthly of paediatric admission at specialist Hospital Potiskum, for the period of 7 years from January 2015 to December 2021. From the data collected, the trend line is constructed by the method of Arima method and Autocorrelation

function (ACF) method. Due to the presence of patial Autocorrelation function (ACF) associated with the collection of paediatric admission in some month, the data seasonal by using the ARIMA Model method of 12 months. The slop of the ARIMA Model method = **42.27 - 0.0549×t** It is used to forecast what may likely happen in the future while the seasonal indices, also indicates that there is going to be decreases due to the Autocorrelation function (ACF) influences associated with the Number of Paediatric Admission within a range of the given interval. Therefore, the subsequent years is going to be decreased in the number of paediatric admissions that will have admitted into the Specialist Hospital Potiskum. Therefore, this shows that there is a decrease in the number of paediatric admissions over the period of time within a given interval. However, the equation is saying that in every month there is going to be a decrease of ($\boldsymbol{Yt = 42.27 - 0.0549 \times t}$) for every month.

Autocorrelation function (ACF)

Furthermore, the slope that high correlation influence in some month than the other month, for instance in the month of May, November December, September, and may, have higher increase of paediatric admission than the other month due to the weather situation and reduction of Boko Haram crises.

Recommendation

1. Government should embark on immunization programme.
2. Government should provide better infrastructural facilities, equipment, and drugs to the hospital for effective diagnosis and treatment.
3. There is need for parent to take good care of their children by eating balance diet and keeping the environment clean as the way of preventing the spread of diseases.
4. Government should provide the hospital with qualified medical officers; this will go a long way in providing the health care delivery system in the state. The partial autocorrelation function is useful in sum situation where autocorrelation function pattern is hard to determine.

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