

**WHAT IS NEW IN PAEDIATRICS IN 2018****Abdulahdi H. Almazroea***Associate Professor of General Pediatric College of Medicine, Taibah University, Medina, Sauda Arabia.***ARTICLE INFO****Received:**

12 Mar 2019

**Received in revised form:**

22 Sep 2019

**Accepted:**

24 Sep 2019

**Available online:**

21 Oct 2019

**Keywords:** Pediatric Research, Childhood, Children, Chronic Disease, Saudi Arabia, research at Saudi Arabia

**ABSTRACT**

**Abstract:** This is a retrospective study recording the latest pediatric investigations and reviews in 2018. The aim was to review the newly updated investigations in pediatrics collected in the period from 2018 to the present time in (KSA) and to determine the impact of pediatric research on children's health in Saudi Arabia in 2018; examining the effect of pediatric research, higher know- that have led to changes in the volume of pediatric research, and finally, highlighting the feasibility of ground-breaking techniques developed through research. This is a descriptive study of different researches in various pediatric aspects such as pediatric trauma, stroke, congenital heart disease, emergency care, pulmonology, nephrology, psychology, dental care, diabetes, nursing care, and other relevant fields highlighting the achievements of Saudi research conducted over the past years. Research done in a specialty other than pediatric specialties. The research was conducted more than five years ago. The research was not conducted in or about Saudi Arabia. Conclusion There is a dearth of meticulously conducted research in Saudi Arabia especially in infants and young children. Considering the increasing prevalence of disease in Saudi Arabia, especially in infants and young children, the research interventions need to be significantly improved. GCC countries overall have to develop the research.

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**To Cite This Article:** Abdulhadi H. Almazroea, (2019), "What is new in Paediatrics in 2018", *Pharmacophore*, 10(5), 67-72.

**Introduction**

Children have faced very difficult and seemingly insurmountable challenges of many illnesses in a pediatric study including pediatric shock, stroke, congenital heart disease, emergency care, pulmonology, nephrology, psychology, dental care, diabetes, nursing care, and other relevant fields.

Genetically inherited diseases, environmental effects, genetically modified food, and diabetes have been affecting pediatric studies. Without these pioneering researchers and the investment that drives their efforts, innovations in pediatrics would have long been undeveloped affecting the local children's care systems [1]. The investigations completed in KSA in 2018 have not been counted. We will address the most important of these studies in KSA, including what is important for the world as a whole and examples of such research include Saudi Arabia bronchiolitis in children, child abuse, pediatric brucellosis, Type 1 Diabetes and obesity.

**Bronchiolitis in children**

Based on a prescription by the Saudi Pediatric Pulmonology Association (a subsidiary of the Saudi thoracic society), bronchiolitis is one of the common illnesses in the nation (KSA). The association informs the health care systems in the KSA about the prevalence of such conditions and how urgent they are needed to have a national guideline according to the latest and best evidence-based practice.

Bronchiolitis is an infection of the lungs. It's when your child has swelling in the smaller airways (bronchioles) of the lung. This swelling blocks air in the smaller airways. Bronchiolitis usually happens in the winter and early spring. It most often affects children younger than 2 years old. The Saudi initiative of bronchiolitis prognosis, control, and prevention (SIBRO) aimed to facilitate pediatricians and general practitioners to manage such conditions including clarifying the roles of supportive therapy; oxygen; bronchodilators; anti-inflammatory, antibacterial, and antiviral agents; and making clinician conduct on the

basis of the evidence. The prevention methods are reviewed, as well as the potential role of complementary and alternative treatment(CAM)[2].

### **Definition**

Bronchiolitis is defined as an acute inflammatory illness of the small bronchioles, that's usually resulting from a viral infection. The most common agent is a respiratory syncytial virus (RSV). This condition may manifest at any age, but symptoms are usually severe only in young infants [3].

### **Epidemiology:**

The prevalence of bronchiolitis in the KSA ranges between 25%-88%. RSV belongs to the pneumoviridae groups (a single-stranded RNA) with two subtypes, A and B. Bronchiolitis is a well-recognized condition; it affects around 1%–3% of all healthy children and more than 10% in high-risk groups.

Bronchiolitis represents a large public health burden throughout the world where 2%–10% of cases require hospitalization. About 5% of RSV bronchiolitis cases require Intensive Care Unit (ICU) admission[2].

### **Burden of Respiratory Syncytial Virus at the KSA**

In a 6-year study in the KSA, more than 600 hospitalized cases of acute lower respiratory infections (ALRI) were assessed. Of all samples, RSV was detected in around 300 samples. The overall detection rate was 48.1%. Among the positive samples, the virus was most frequently isolated from 295 patients, which was estimated at 95.5% of the total viral agents. Approximately 245 patients were <1 year of age. The high rate of viral infection was diagnosed in infants throughout the course of the primary 6 months ( $P < 0.05$ ). Of the 309 positive patients, bronchiolitis was diagnosed in 264 (85%) and pneumonia in forty five (14.5%). RSV was the frequently assaulting agent of each illness ( $P < 0.05$ ) [3].

Another study tested respiratory virus infection in infants, seventy samples out of two hundred tested (nasopharyngeal aspirates) samples were positive for RSV infection exploitation; duplex period of time enzyme chain reaction (PCR) indicated that 57.1% were type A viruses and 42.9% were type B. These studies detected the winter season predominance of each viral subtypes in RSV infection of kids with a small dominance of group A viruses. During this study, the samples were divided into four main age teams. 70% of the RSV-positive samples were among the children less than 1 year. The incidence and age were negatively correlated. Risk factors like male gender, young age (<1 year), and bronchial asthma attack could also be major tributary factors to RSV contamination in Saudi Arabia kids[4]. The third study enclosed 10,617 samples collected from patients with suspected symptoms of bronchitis, there were 883 (8.3%) positive patients, 733 of which had been for RSV, 79 for Para influenza, 62 for influenza disease, and 9 for animal virus. The age distribution showed that more than 90% of infections happened in youngsters under 1 year of age. RSV is a crucial reason for lower respiratory tract infection in infants and therefore the commonest reason for hospitalization. RSV infections commonly occur during seasonal outbreaks (winter). For example, RSV infections occur between Gregorian calendar November month and February (winter season) with a peak throughout January[5]. The respiratory syncytial virus is the most frequent reason for bronchiolitis. Another study included 282 samples, 128 of which were positive for RSV.

According to clinical observations, RSV infection was considerably related to bronchopneumonia ( $P < 0.05$ ) and bronchiolitis. Of the infected youngsters, around 40% and 35% were hospitalized for <4 and 5-8 days, respectively. The most common signs and symptoms were as follows:

1. Cough and tachypnea were the most frequent symptoms, these manifestations occurred in 100% and 98% of the kids, respectively.
2. Fever (81%)
3. Wheezing
4. Crepitation
5. Retraction

The mortality rate was very low (only three cases). Risk factors related to RSV infection in Saudi youngsters were investigated [6].

Pre-maturity was correlated with exaggerated severity of the viral infection. About 35% of pediatric intensive care unit (PICU) infants were found to be premature. It is recognized by many studies that the RSV infection has a more severe course in premature and immunocompromised children [4]. It is clear that both the characteristics of the host (age, prematurity, comorbidity, immunodeficiency) and of the virus (including the subtype) influence the clinical course of infection, however the actual contribution of each factor is still unclear. Indeed, children with preliminary pulmonary, & cardiovascular abnormalities were additionally liable to RSV infection. Over 5 years follow up, the earliest RSV cases appeared in October and the latest cases were recorded as late as April [7].

### **Child abuse**

Child abuse is outlined as any emotional, sexual, or physical pattern or neglect by an adult during a role of responsibility toward somebody who is beneath eighteen years old. It refers to any style of action or failure to act that turns in damage or potential injury for a toddler. The adult could also be a parent or alternative loved one or another caregiver, together with

sports coaches or teachers[8] & [9]. A study was designed in the KSA with the aim of understanding the elements pertaining to deal with domestic violence (DV) and child abuse and neglect (CAN). That study is also regarded as the largest study with a sample size more than 5000 participants of both genders. The aim of the large sample size study was to be able to minimize the error fractions during the statistical analysis. The research concentrated on professionals and personnel at all levels, comprehensive figure-chiefs [10]. However, limited reports recorded domestic violence and overlook in the KSA. The annual record of the National Family Safety Registry had equal output [11]. In 2014, scientists found that the psychological subdivisions of abuse were greatly recorded in the adolescent age group. Child physical abuse and disregard of children were the greatest observed forms of abuse through the last ten years [12].

### **Global prevalence of child abuse**

There are limited publications on child abuse in the Gulf. Incidence of toddler maltreatment varies from one type to another and from one country and society to another.

**Physical abuse:** In 2017, the World Health Organization (WHO) estimated that 23% of children worldwide were physically abused. Unfortunately, most African and Asian international locations lack current and dependable information in this regard, yet older publications indicated a high incidence of physical abuse in these regions and similarly in Bahrain and Kuwait. A more recent retrospective assessment of scientific data estimated about 64% (152 of 237) of reported maltreatment instances in Bahrain had been due to physical abuse [13]. In 2007, Al-Mahroos showed that in the period between 1987-2005 literature search exhibited that physical abuse was approximately 33% (50 out of 150) and 89% (24 out of 27) respectively. Focusing on the extent of child abuse and disregard cases in the KSA is essential for establishing a rigorous protection plan and countering child abuse [14]. Research recorded the prevalence of child bodily abuse in the KSA collected and published between 2000 and 2015 [15]. Researchers found that 28/40 cases in the KSA were classified as bodily abuse status or as status known by the Suspected Child Abuse and Neglect team (SCAN) at King Abdulaziz Medical City at National Guard, Riyadh, through three various time durations. There were more than 130 cases, 49% of whom were physically abused [16]. The annual report of the National Family Safety Registry (NFSR) in 2010 showed that down 70% of 205 status found as having bodily abuse, Munchausen syndrome with the resource of proxy, or shaken baby syndrome. In addition, the annual report of the Hospital-Based Child Maltreatment Registry in 2012 showed that 94/263 of abuse was physical. In addition, urban descendants were more than rural cases of the KSA (Riyadh, Makkah, and the Eastern provinces) (National Family Safety Registry, 2012) [17]. In 2015, a study conducted in Dammam showed that out of 87 abused cases in 2 hospitals, 13% were recorded as bodily abuse and around 2% of them were diagnosed with combined pathology [18]. As regarded bodily and sexual abuse; large-scale research was organized and carried out in 2011 and 2012 utilizing the ISPCAN Child Abuse Screening Tool-Child in Al-Kharj, in the southeast of the capital. It was shown that 57% of teenagers who participated in the research had experienced physical abuse. In 2010, Al Eissa and Almuneef discovered that about one-fifth of the suggested abuse and disregard status might be known as sexual abuse status [15]. In Dammam, Almadani et al. showed more than 80% of the abuse status in Al-Kharj, Al Eissa et al. discovered that 14% of samples aged 15-18 years had been sexually abused [16]

### **Pediatric brucellosis**

A new era of research occurred on brucellosis in the children age group. In Saudi Arabia, brucellosis is an endemic zoonotic disease. Ministry of Health reports showed that the incidence of infection was 18/100,000 population/year in 2011. Pediatric patients composed of 20-30% of the affected patients. So, it is a fact that brucellosis is an important health problem in KSA [19]. An updated review has determined that brucellosis is an actual health issue in the KSA. Unfortunately, it is higher than most other developed and developing countries despite decline in the incidence rate between years 2004-2012. The epidemiology of brucellosis among those aged <14 years was lower than other age groups. The risk factor for brucellosis is the male gender between 15-44 years. The later age group has the majority rate followed by below 14 years and finally below 1 year, which is regarded as the lowest susceptible group. Al-Qassim recorded the highest number of cases followed by Aseer in the South, Hail, and Northern borders. It also followed a geographical pattern (western borders recorded fewest cases than east or north) [20]. In the pediatric brucellosis study, the diagnostic and therapeutic facets of brucellosis were investigated in 163 Saudi patients with brucellosis who were successfully treated with antimicrobial therapy consisting of aminoglycosides and sulfa drugs with various amounts. The relapse rate was 3.6% and the treatment failure rate was 2.1%. The most commonly prescribed drug regimens for adults and children older than eight years were doxycycline-rifampin and doxycycline-streptomycin. For young people younger than 8 years old, rifampin-sulfamethoxazole-trimethoprim was the best combination. All treatment failures and relapses came about among children <10 years of age or adults >45 years old. Congenital brucellosis is regarded as a rare condition associated with unique morbidity and mortality [21]. The reason for the high prevalence of brucellosis in Saudi Arabia is attributed, but not limited, to the following:

1. The nomadic life style including animal raising, especially of sheep and camels.
2. The traditional belief of the great benefit of ingesting raw milk, especially camel milk.
3. The high rate of animals imported from Africa where the disease is endemic, with a lag in compliance with national and international policies of animals screening and quarantine rules. In Saudi Arabia, the prevalence of brucella among different animals is high; 8% in camels, 18.7% in cattle, 6.5% in sheep and 9.7% in goats.

4. The mixing of different animal herds together, such as raising sheep and cattle together.
5. The low levels of public awareness about the seriousness of brucellosis as a human disease.
6. The resistance to slaughtering infected animals.[22]

### **Type 1 Diabetes Mellitus in Saudi Arabia**

In Saudi Arabia Type 1 diabetes mellitus (T1DM) is widely upraising. Its prevalence is measured as 1/300 with the prevalence rate of 3%. Interestingly, the prevalence of type 1 is more growing in infants and children less than 1 year old. It has been regarded a challenging project to face type 1 DM for young children. In KSA, patients with type 1 DM under age of 14 were found to be 14% among Middle East countries. In Saudi Arabia, 35000 children and teenagers have type 1 DM. This has made the KSA the eighth in terms of population with DM patients and 4th country worldwide in incidence. However, in comparison to developed countries, the impact of research interventions is shallow, gross, and insufficient [23].

The prevalence of this disease can be attributed to:

1. Change in nutrition
2. Changes in breastfeeding practices
3. Rapid lifestyle changes
4. Exposure to exclusive environmental pollution and toxins
5. Exposure to autoimmune factors [24]
6. The risk of hypoglycemia in type 1 diabetes mandates full knowledge and experience in insulin therapy practice and proper diet management [25].

Primary health care providers can offer full knowledge about the socioeconomic status of the patient's family. Family members may influence metabolic control of T1DM either directly or indirectly. Patients with pancreatic islets transplantation became free of diabetes in 10% of patients [26].

### **Obesity in the Kingdom of Saudi Arabia**

Obesity is defined as immoderate fat accumulation that might also impair health beyond limits of age, sex, and height. In adults, if BMI > 25, the weight is regarded as overweight and a BMI > 30 is regarded as obesity [27]. The statistical findings of obese and weight problems worldwide have increased over the past 30 years. This phenomenon is universally observed in developed and developing countries. KSA poses an advanced rank in the prevalence and incidence of obesity among Middle Eastern countries [28]. The raised rate of obesity is passing above age, occupation, and gender.

#### **The predominant elements causing weight problems are:**

1. Eating habits
2. Family history
3. Genetic factors
4. Diet pattern
5. Marital status
6. Lack of physical activities
7. Hypertension

#### **The main complications of obesity are:**

1. Cardiovascular diseases
2. Diabetes
3. Cancers
4. Ischemic heart disease

The research impresses the necessity to increase public knowledge regarding the side effects of obesity. It is important to transmit the issue to a national level. Transmitting the obesity issues to involve all country citizens from kindergarten and upward is a good strategy [29]. The everyday per capita consumption during this period has increased by about 150% in KSA. Moreover, the complications are related to a high incidence of lifestyle-related diseases, including diabetes, hypertension, and ischemic heart disease. A find out about has been conducted and included on 10,229 patients; the researchers found that 40.9% of respondents were overweight. Obesity was found in 29% of respondents. Central obesity was found in 42% of respondents. By using multivariate analysis; age, level of education, and presence of family history of hypertension and diabetes were located to be associated with higher BMI. In contrast, smoking, higher rank, heavy physical activities, and fruit intake were negatively related with BMI. The significant changes in BMI were more observed in soldiers due to unhealthy dietary habits and abnormal physical activities [30]. Females are more prone to obesity in KSA. A national epidemiological study was conducted on 17,232 Saudi households between 35-75 years. The researchers found that the prevalence of obesity was 36.9% and 35.5%, respectively. Male gender is more prone to be overweight while obesity is more common in females. Another

study was carried out in Hail, KSA by using data of 5000 Saudi participants. The data was extracted from 30 health centers. The researchers found the prevalence was 63.6% and the female to male ratio was found to be 1.3:1 [31].

## Conclusion

Each pediatric section and department at KSA was involved in at least one or two researches over the last year. Researchers targeted their research points of view towards the most important fields that harbor great impacts on Saudi Arabia health issues. These included pediatric intensive care, obstetric and pediatric pharmacology, genetic disorders, primary immunodeficiencies, and rare metabolic diseases, hematopoietic stem cell transplantation for primary immunodeficiency. Microenvironment and chemo resistance in leukaemia, acute lymphoblastic leukemia, relapsed and (faces marvellous efforts with little responses), front temporal lobar degeneration, and amyotrophic lateral sclerosis.

In this paper, the researcher pointed out certain common illnesses relevant to Saudi Arabia.

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