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# غصنفر طبي ژورنال

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### Instruction for of Article

## Editorial Note

Afghanistan has experienced a notable growth in health research in the past two decades. Also, the Institutional Review Board (IRB) is established in 2006 and is the central body that has the formal regulating authority of all the health research activities in Afghanistan, granted through MoPH.

The IRB has taken into consideration recommendations of the World Medical Association Declaration of Helsinki, the Council for International Organizations of Medical Sciences (CIOMS), the Indian Medical Research council, the Canadian Council for Research, and the South African Research Council. The IRB perform the primary functions of review, approval, monitoring and reviewing abstracts with regards to adherence to the established criteria of ethical and technical scientific practices in research.

The goals of research, while important, should never be permitted to override the health, well-being, and care of research participants. The IRB take into consideration the principle of justice. Justice requires that the benefits and burdens of research be distributed fairly among all groups and classes in society, taking into account age, gender, economic status, culture, and ethnic considerations. The IRB provide independent, competent, and timely review of the proposed studies. The IRB maintain independence from political, institutional, professional, and market influences. The IRB is responsible for carrying out the review of proposed research before the commencement of the research. The IRB ensure that there is regular monitoring of the ethics and quality of ongoing studies that received a positive decision. The IRB is responsible for acting in the full interest of potential research participants and concerned communities, taking into account the potential benefits of research projects to participants and non-participants.

All health-related research involving the collection of data from human subjects that is conducted inside Afghanistan must be submitted to the IRB for review and approval. Some research activities might be exempted from IRB review but the IRB must confirm the exemption.

The objectives of the IRB are as follows:

- To protect the rights, privacy, dignity, and welfare of human subjects with special attention to vulnerable groups such as children, pregnant women, handicap, disables, prisoners, mentally retarder, and so on.
- To approve sound, quality, and technical merit research work.
- To provide technically and practically sound guidance to the researchers.
- To monitor research studies on above aspects (ethics and quality).
- To review the preliminary results and forward for dissemination and publication.

IRB ensure the competent review and examination of all technical and ethical aspects of the submitted research studies. They ensure that their duty can be carried out free from bias and influence that could have impact on their sovereignty.

Therefore, the role of the IRB and the ethics review committees from which approval is needed must be understood by researchers before research in human subjects may begin.

It is necessary for researchers to understand the role and purpose of the IRB from which approval is required before research in human subjects may begin.

Researchers who appreciate the IRB's purpose will be better equipped to navigate the labyrinth of research ethical norms.



# Descriptive Epidemiology of Coronavirus Disease 2019 in Afghanistan

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## Abstract

**Background:** On 31 December 2019, the Coronavirus Disease 2019 (COVID-19) emerged in China, and soon spread globally including across Afghanistan. The aim of this study was to review and describe the epidemiological characteristics of COVID-19 in the country.

**Methodology:** A descriptive epidemiological study was conducted to describe the cases and deaths due to COVID-19 according to time, location, and demographic characteristics. Data were extracted from the District Health Information Software 2 (DHIS2) databases developed by Ministry of Public Health between February 24, 2020 and February 02, 2021.

**Results:** The first suspected case of COVID-19 was imported from Iran to Herat province in Western Afghanistan and was laboratory-confirmed on 24 February 2020 in Kabul. On 22 March 2020, the first official death due to COVID-19 was announced in Balkh province. Within approximately one year, a total of 55,174 cases including 2,406 deaths from COVID-19 were officially reported. A total of 254,562 samples were tested by PCR and 21.6% were identified as positive for COVID-19. Kabul, Herat, Balkh, Nangarhar and Kandahar had the highest number of cases among 34 provinces. The average age of infected individuals was 40 years (range: 1-119 years). Almost 67% of COVID-19 cases and 72.7% of deaths occurred among males. The majority of cases (46.7%) were among the age group of 20-40 years. The majority (78.7%) of COVID-19-related deaths occurred in those aged 50 years and older. A total of 4,269 (7.7%) healthcare workers were infected of whom 88 (3.7%) died.

**Conclusion:** Higher morbidity was recorded in young population while increased rates of mortality were reported in older groups. Males were more infected and died than female. The preparation for the outbreak was poorly satisfactory. Data quality and scope should be strengthened and further epidemiological studies are required to determine the actual pattern of disease in Afghanistan.

**Keywords:** Afghanistan; COVID-19; Pandemic; Descriptive; Epidemiology

## اپیدمیولوژی تشریحی مرض کوید-19 در افغانستان

### چکیده

**پس منظر:** به تاریخ 31 دسامبر سال ۲۰۱۹، بیماری Coronavirus 2019 (COVID-19) در چین پدیدار شد و به زودی در سطح جهان از جمله افغانستان گسترش یافت. هدف از این مطالعه بررسی و توصیف الگوی اپیدمیولوژیک وقایع COVID-19 در کشور میباشد.

**روش تحقیق:** یک مطالعه اپیدمیولوژیک توصیفی به منظور تشریح وقایع و وفیات ناشی از COVID-19 از نظر زمان، مکان و فرد انجام شده است. ارقام از دیتابیز معلوماتی وزارت صحت عامه که در DHIS2 نشر شده است از تاریخ ۲۴ فبروری ۲۰۲۰ الی ۲ فبروری ۲۰۲۱ استخراج و مورد استفاده و تحلیل قرار گرفته است.

**نتایج:** اولین واقعه مشکوک COVID-19 از کشور ایران به ولایت هرات در غرب افغانستان وارد شد و توسط لابراتوار مرکزی صحت عامه در ۲۴ فبروری در افغانستان تأیید شد. در ۲۲ مارچ، نخستین مرگ رسمی به علت COVID-19 در ولایت بلخ اعلام شد. طی پنج ماه، به طور رسمی ۵۵۱۷۴ واقعه تأیید شده از جمله ۲۴۰۶ وقایع فوتی گزارش شده است. در مجموع ۲۵۴۵۶۲ نمونه با استفاده از روش PCR مورد آزمایش قرار گرفته است و از جمله ۲۱٫۶٪ مثبت گزارش شده است. کابل، هرات، بلخ، ننگرهار و کندهار آلوده ترین ولایات از جمله ۳۴ ولایت بودند. سن متوسط افراد منتن به ویروس ۴۰ سال است که بین یک الی ۱۱۹ سال تفاوت وجود داشته است. تقریباً ۶۷٪ وقایع تأیید شده و ۷۲٫۷٪ مرگ و میر مرد ها بوده اند. بیشتر وقایع (۴۶٫۷٪) در گروپ سنی ۲۰ الی ۴۰ سال قرار داشته اند. مرگ و میر بیشتر (۷۸٫۷٪) در ۵۰ سال و بالاتر از آن رخ داده است. ۴۲۶۹ (۷٫۷٪) کارمندان مراقبت های صحتی به ویروس منتن شده اند که از جمله ۸۸ (۳٫۷٪) نفر فوت نموده اند.

**نتیجه گیری:** میزان وقایع یا مصابیت بالاتر در گروپ سنی جوان ثبت شده است، در حالی که افزایش مرگ و میر در گروپ های مسن تر گزارش شده است. اکثراً مردان بیشتر از زنها مصاب بوده اند. آمادگی برای مبارزه با طغیان قناعت بخش نبوده است. کیفیت ارقام باید تقویه شود و برای تعیین تصویر اصلی بیماری در افغانستان، مطالعات بیشتری اپیدمیولوژیک در این عرصه ضرورت است.

**کلمات کلیدی:** افغانستان؛ کوید-۱۹؛ پاندمی؛ توصیفی؛ اپیدمیولوژی

## Introduction:

A new atypical pneumonia caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was initially detected in Wuhan, China on December 31, 2019 and later on officially named by the World Health Organization coronavirus disease 2019 (COVID-19) <sup>(1,2)</sup>. The isolation of coronavirus goes back to 1937, when it caused bronchitis in birds, however, human coronaviruses were first characterized in the 1960s which were associated with respiratory diseases <sup>(3,4)</sup>. The virus is called coronavirus due to spikes on its surface resembling crown <sup>(5)</sup>.

Coronaviruses (CoVs) belong to the family Coronaviridae. The family Coronaviridae has two subfamilies including Orthocoronaviridae and Torovirinae. The subfamily Orthocoronaviridae has four genera: alphacoronavirus, betacoronavirus, gammacoronavirus and deltacoronavirus <sup>(6)</sup>.

Until now, seven types of coronaviruses have been identified which have the ability to infect humans. The human coronaviruses are 229E, NL63, OC43 and HKU1, and the rarer strains are Severe Acute Respiratory Syndrome (SARS-CoV) <sup>(7)</sup> and Middle Eastern respiratory syndrome coronavirus (MERS-CoV) which first appeared in 2012 in Saudi Arabia <sup>(8)</sup> and the recent SARS-CoV-2 <sup>(9)</sup>. The intermediate hosts of SARS-CoV-2 are unknown <sup>(10)</sup> despite claims that this may be bats or pangolins, this is yet to be confirmed and still requires investigation.

The World Health Organization (WHO) declared the outbreak of COVID-19 as a pandemic on 11 March 2020 <sup>(11)</sup>. As of Feb 02, 2021, the total number of confirmed cases globally were 104,384,587 and the countries with the highest number of cases are continued to be USA, India, Brazil, Russia and UK. Furthermore, on same date the total number of deaths were 2,262,226 and same countries recorded higher deaths as well <sup>(12)</sup>. The global case fatality ratio of COVID-19 has been approximately 3-4% <sup>(11)</sup> which is still lower than previous coronavirus outbreaks such as SARS (9.6%) and MERS (35.2%). Despite the lower mortality rate, COVID-19-related deaths

are greater in number than deaths from either SARS or MERS <sup>(12-13)</sup>.

Afghanistan is a South Asian country with a population of 31.6 million people, 72% of whom live in rural areas <sup>(14)</sup>. The health system of the country has been steadily progressing over the last 17 years, with increasing coverage of health services throughout the country <sup>(15)</sup>. There has been a severe shortage and inequitable distribution of physicians across the country, with 7.2 physicians per 10,000 people in urban areas and as few as 0.6 physicians per 10,000 in rural areas <sup>(16)</sup>. The low literacy rate of 32% has affected community awareness of public health, sanitation, and hygiene practices <sup>(17)</sup>.

Afghanistan is affected with major disease outbreaks such as COVID-19 due to its weak health system and limited capacity to cope with these emergencies. As a result of years of war and conflict as well as the harsh economic situation, millions of Afghans have left the country to Iran and Pakistan <sup>(18)</sup>. During early hit of COVID-19 pandemic, from January 1 to March 14, 2020, a total of 138,013 returnees have come back to Afghanistan through Iran and Pakistan. The first case of COVID-19 in Afghanistan was confirmed in Kabul in February 2020 <sup>(19)</sup>. Since then, many clusters have been confirmed all over the country. As mentioned earlier, Afghanistan has been vulnerable to emergencies and outbreaks due to the limited availability of equipped medical facilities, inadequate numbers of trained medical staff, a large influx of returnees from neighbouring countries initial spread of outbreak, and lack of resources overwhelmed by insecurity. This study aims to describe the burden of COVID-19 pandemic in Afghanistan focusing on the demographic, geographical and epidemiological patterns.

## Methods:

A descriptive study was designed to review, analyze, report and update the epidemiological characteristics of COVID-19 cases and deaths in Afghanistan, consecutively.

Initially, two months' data regarding COVID-19 from DHIS2 database disseminated by Ministry of Public Health, Afghanistan were analyzed and

the reports was published in Mili Scientific and Research Journal, a local university in Kabul. Later on, analysis of three months' data reported and published in Global Academic Journal of Medical Sciences which is available online at <https://gajrc.com/gajms>. The current paper describes almost one year of data covering the period February 24, 2020 to February 02, 2021. Daily data regarding COVID-19 were entered by data officers in provinces as well as in Kabul using DHIS2 which is available for use in public domain.

The case definition which was developed by National Disease Surveillance and Response (NDSR) in the Ministry of Public Health (MoPH) was used for identification of cases. The confirmation was declared when the sample was tested by public health laboratory using PCR test. The MoPH, publishes dashboards on its website showing the COVID-19 infections and reflect the geographical as well as demographic burden of the disease in Afghanistan. Currently, this website provides limited data, however, it contains the number of cases tested and confirmed, the number of deaths, the sex of the patients, and resident provinces of the infected individuals <sup>(19)</sup>.

In this study, data were obtained, analyzed using Microsoft Excel Version 16.0 and IBM SPSS for Windows, Version 20.0 (IBM Corp, Armonk, NY, USA). The frequency of cases of SARS-CoV2 infection and percentage of resulting deaths were calculated and categorized according to sex, age group, and province. In addition, the case fatality rate (CFR) as a measure of the severity was calculated according to sex, age group, and province.

### Results:

After one-year existence of COVID-19 pandemic in Afghanistan, the total number of confirmed official cases and deaths as of February 02, 2021 were 55,174 and 2,406, respectively; while the total number of active cases was 4,970 and total recovered cases were 47,798 across the country <sup>(19-20)</sup>. The first case of COVID-19 was imported from Iran to Herat province of Afghanistan and

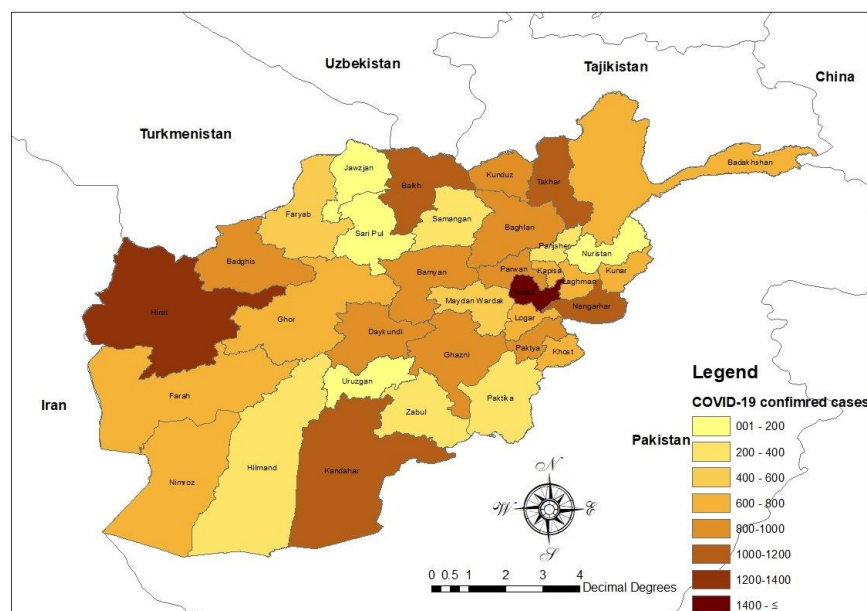
confirmed in the Central Public Health Laboratory (CPHL) on 23 February 2020 and announced on 24 February by the Ministry of Public Health (21). On 22 March 2020, the first death due to COVID-19 was announced; this was a 40-year-old man who had died in Chintal district of Balkh Province, three days before confirmation <sup>(22)</sup>. At the time of writing this report, totally 254,562 samples have been tested by PCR showing a positivity rate of 21.7%. The positivity rate has been changing from 20-40% in last year. <sup>(23)</sup>. The frequency of cases and deaths were low in the beginning of the outbreak and started to increase in late March 2020 with peak of first wave in mid-June. The second wave of COVID-19 started to increase in October, 2020 and with peak of cases in first couple of weeks in December, 2021. Nowadays, apparently, the cases are decreasing with recording of 53 confirmed cases and one death on 2<sup>nd</sup> February, 2021 nationally.

### *Geographical distribution of COVID-19 infections:*

During Summer time in 2020, lockdown measures in neighboring countries including Iran and Pakistan forced many Afghan refugees to return home, mostly through the provinces of Herat, Nimroz and Farah (western borders of Afghanistan) while they localized, more or less, all over the country. Through this way, before community spread, people with the disease were dispersed across the majority of provinces <sup>(24)</sup>.

The epicenter of the outbreak was Herat province in the west of the country which shares long border with Iran and is where the first case in Afghanistan was imported and reported. Progressively, COVID-19 cases were detected and reported from all other provinces. After a year on February 02, 2021 Kabul province has a total of 18,329 cases, of whom 16,650 recovered and 775 died, so that the capital of the country was at the top of the table and Nooristan which reported only 134 cases of whom 101 recovered and one died is at the bottom of the list. As of February 02, 2021, all 34 provinces have reported infections with COVID-19 with different statistics (Figure 1).

Figure 1: Geographical distribution of COVID-19 cases in Afghanistan in 02 February, 2021



After Kabul, the five provinces with the higher number of COVID-19 cases were Herat (9103), Balkh (3361), Nangarhar (2493) and Kandahar (2476). However, Kabul (775) Herat (417), Balkh (180), Nangarhar (153), Ghazni (75) and Kandahar (35) are the provinces with highest number of deaths. It should be noted that few provinces have good reporting mechanisms while in some other provinces the deaths are not properly reported and recorded at the provincial level. Provinces with lowest number of cases and deaths are Nouristan, Urozgan and Sarepul.

#### Description of COVID-19 cases and deaths by age group and sex:

Based on data until 02 February, 2021, of total cases, 35264 (67.6%) were male with general average age of 40 years and wide range of 1-119 years. Table 1 shows the distribution of the number cases according to age and sex. About half of cases (54%) were in the age group of 20 to 40 years with lower proportion of cases in two ends of classes.

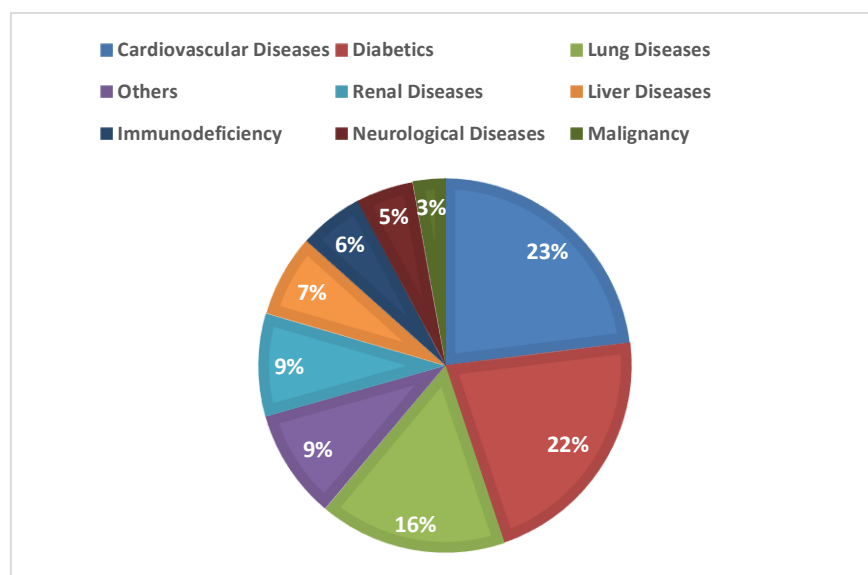
Table 1: Frequency distribution of COVID-19 cases by sex in Afghanistan, July 2020

Categories	Male	%	Female	%	Total	%
<i>Age Groups (years)</i>						
<b>0-9</b>	152	0.43	119	0.70	271	0.52
<b>10-19</b>	1421	4.03	1685	9.96	3106	5.95
<b>20-29</b>	8435	23.92	4269	25.22	12704	24.34
<b>30-39</b>	8637	24.49	3020	17.84	11657	22.34
<b>40-49</b>	6292	17.84	2597	15.34	8889	17.03
<b>50-59</b>	4570	12.96	2497	14.75	7067	13.54
<b>60-69</b>	3494	9.91	1723	10.18	5217	10.00
<b>70-79</b>	1600	4.54	765	4.52	2365	4.53
<b>80+</b>	663	1.88	250	1.48	913	1.75

Out of 2406 deaths at least 516 had one of underlying diseases. Important underlying conditions were cardiovascular diseases, diabetes, lung dis-

eases, renal diseases, liver diseases, immunodepression, neurological diseases, malignancies and few other diseases. The pie chart showing the proportion of each is given in figure 2.

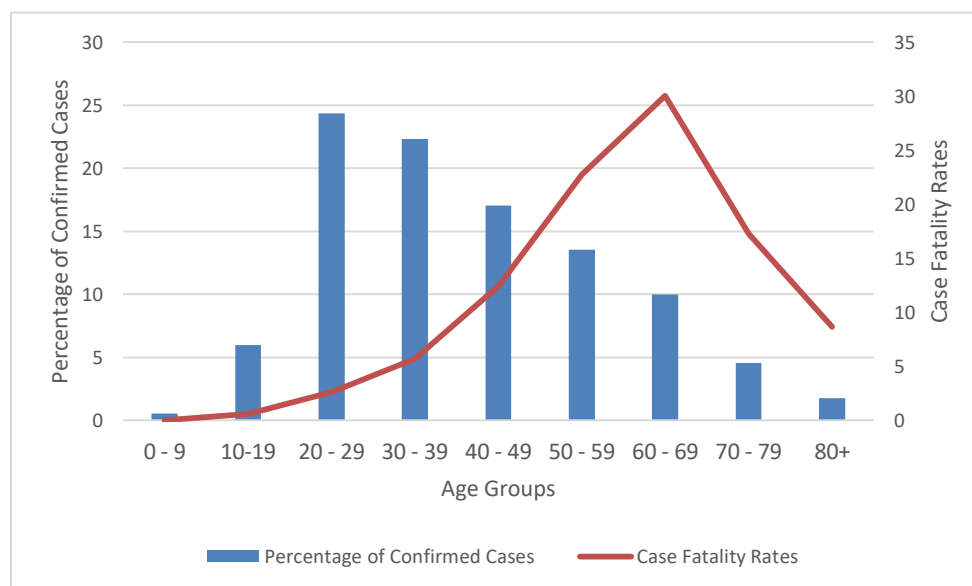
Figure 2: Proportion of deaths due to COVID-19 with underlying conditions, February, 2021



Furthermore, approximately 72.7% of deaths occurred in males and 27.3% in females. Figure 3 depicts the proportion of COVID-19 cases and the CFR according to age group. Despite lower

number of infections in higher age groups, the CFR are increased. Almost 78% of COVID-19-related deaths were reported in age group of  $\geq 50$  years.

Figure 3: Proportion of cases and deaths due to COVID-19 by age groups in Afghanistan, February, 2021



Of all cases to February 02, 2021, 12.4% were hospitalized while the remainder either isolated in their homes or their outcome was unknown. Rate of hospitalization was low in 2020 (12%) as com-

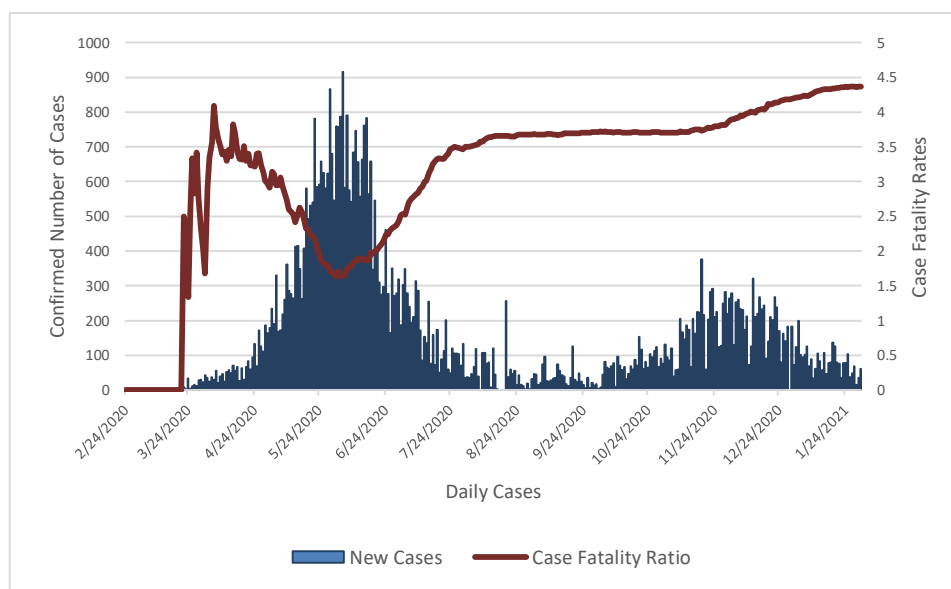
pare to first month of 2021 (25%). Among hospitalized patients, 66% were male vs 34% in females. As of February 02, 2020, totally 4,269 healthcare workers were infected with COVID-19 in the country which accounts for 7.7% of total

infections. There were also 88 deaths accounting for 3.7% of total deaths due to COVID-19. The top ten provinces with the highest number of infections among healthcare workers were Herat (1092), Kabul (1029), Nangarhar (429), Balkh (261), Takhar (146), Wardak (142), Kunar (137), Kandahar (82), Baghlan (72) and Paktya (82) provinces. However, the highest number of COVID-19 related deaths of health workers were reported from Kabul (44), Herat (12), Balkh (9), Nangarhar (6) and Kunar (3) provinces.

#### **Description of COVID-19 cases and deaths over time:**

Of the total cases of COVID-19 (55174) the recovery rates were 86% which is very high when compared with data until first week of June 2020

*Figure 4: Epidemic curve of daily COVID-19 confirmed cases and case fatality ratio (CFR) in Afghanistan, February 2021*



According to Figure 4, on the first month after detection of the first cases of COVID-19 the CFR was zero due to the absence of any reported deaths. Since the first recorded COVID-19 related death on 24 March 2020 (1st month) the average CFR was 1.33% and for each subsequent month the CFR for 24 April, May, June and July was 3.21%, 1.96%, 2.24% and 3.46%, respectively. It is 4.36% on 02 February, 2021. It means the CFR varied in first couple of weeks of the out-

(9.28%) and last week of July (68%). The CFR was 3.5% on July 24 2020 which increased two-fold compared to first week of June (1.63%); however, this varied on a daily basis and now on February, 2021 it is 4.36%. The first recovered case of COVID-19 infection was reported on 14 March 2020. However, the number of cases and deaths have raised mid-June (this peak corresponds to a couple of weeks after EID-UL-FITR) which shows the peak of first wave. As shown in figure 3 the 2nd wave also started on October by having peak in middle of December 2020; it is now has come down in 1st week of February, 2021. Figure 4 shows the epidemic curve based on number of daily confirmed cases and CFR calculated on daily cases and deaths.

break due to the varying number of cases; however, at the end of graph it shows a consistently steady rise in cases.

#### **Discussion:**

Afghanistan as a conflict affected country which has been experiencing enormous challenges including political unrest, complex emergencies, socio-economic hardships, humanitarian crises and high burden of infectious and non-infectious diseases. Moreover, it is constrained by limited institutional and workforce resources as well as

capacities. These challenges along with COVID-19 have put the country at risk of spread of the diseases with high mortality and morbidity rates. It is important to note that due to the emergency situation and weak health system, the amount and quality of data is lacking in the country <sup>(25)</sup>.

Therefore, like all other countries and nature of global pandemic of COVID-19, it affected Afghanistan by importing its first cases via land border on last week of February, 2020. Gradually, the incidence of confirmed cases and deaths rose until second week of June which showed the highest number of cases (peak) which was more or less comparable with the prediction done by Singapore University <sup>(26)</sup>.

Taking into account the capacity and representative of health information system, the assumption is that, perhaps, a smaller number of cases are detected and the true cases would more than official confirmed ones announced by Ministry of Public Health. No doubt, the preventive or adverse measures will linger or shorten the curve. Furthermore, due to low capacity of PCR testing, low access to healthcare services and misconceptions about COVID-19 management, less households having suspected cases are approaching health centers for testing as well receiving care. The private sector has been allowed to test and manage the cases while its data is not included in the database of DHIS2. Furthermore, low number of confirmed cases is probably linked to low levels of testing, population low confidence and adverse behaviors of the community. Low number of deaths could be attributed to under reporting, age structure of country (young population), widespread vaccination against childhood infection diseases, natural resistance and immunity of third world and underreporting of deaths in the country <sup>(23)</sup>. Anecdotal reports show that there were more deaths bodies buried in graveyards without reporting by community themselves. Few zonal provinces have more cases and deaths comparing other areas in the country. The greater number of cases and deaths in these provinces are likely due to their high population density, being a network of few other provinces, establishment of regional laboratories in these provinces and high access to

health facilities. In these zonal provinces hundreds of thousands of people frequently travel to and from other provinces.

The study indicated that infections were fewer in number as well as in proportion in the lowest and highest age groups, whereas it has increased among the more productive working population in the country. In this study, we observed a higher rate (two-third) of COVID-19 incidence and deaths in men compared to women which is not unexpected because the country is a conservative society and males are more involved in social and economic affairs and are likely to spend more time outdoors and thus have a higher risk of exposure to sources of infection. However, the rates are comparable taking into account the sex, globally. Young and male laborers have left the country due to economic hardship and are now returning back with COVID-19. A series of studies suggests that there was also a higher incidence of MERS-CoV and influenza in men than in women, which is probably due to a higher level of testosterone and a corresponding suppression of their immune response <sup>(27,28)</sup>. In addition, the findings of this study indicated that those in the age groups of 20-30 and 30-40 years are at higher risk of infection while the age group of 60 years or higher had the highest rate of COVID- related deaths. The younger population is economical group and more exposed, therefore more likely to be infected. The lower rates of deaths in this age group may be due to high levels of resistance and immunity. It has been documented that people over 65 years of age and younger people with chronic diseases are at a greater risk of complications resulting from viral infections than healthy adults. This indicates that older and unhealthy younger people are more likely to become infected with COVID-19 owing to a weak immune system, and infection is more likely to be fatal in these groups <sup>(28,29)</sup>.

Apparently, we have been faced with unavailability of true data, so that we used the secondary dataset and not performed a real survey to identify the real epidemiologic picture. The DHIS2 is newly established and should be enriched and strengthened to provide detail and quality data.



Further epidemiological studies/surveys are required to determine the various aspects of disease including risk factors for infection and outcome of COVID-19 in Afghanistan.

Taking into account the analysis of the situations, some lessons are recommended to be recorded to coordinate as better response in future outbreak. Although the government of Afghanistan has announced and implemented restrictions on the movements of people in cities and closed educational and government institutions, it is difficult to continue and sustain such quarantine/lock-down for extended periods of time as close to 54%<sup>(30)</sup> of Afghan citizens live under the poverty line and are on daily wages. The high rates of cases in young populations and high rate of death in older groups with more morbidity in males is required to be taken into account while formulating preventive measures. Inclusion of cases identified by private sector is encouraged to integrate the cases at national level.

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## COVID-19 in Balkh, Afghanistan; characteristics and challenges

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### Abstract

**Objectives:** This study aims to provide a descriptive epidemiology and challenges of COVID-19 cases in the north province of Afghanistan “Balkh”.

**Methods:** The findings are based on the retrospective analysis of 900 confirmed cases from the Surveillance system of the northern region collected from 3 March, 2020 to 9 June, 2020.

**Result:** Despite strict containment measures, the incidence rate of COVID-19 increased from one confirmed case in March to 900 confirmed cases in May and June. The majority of the cases were comprised of Health care workers and security agents. The case fatality rate (CFR) was 5.1% and 8 death occurred in their house without seeking medical care. The results of three expired cases were obtained one day after their death that raises concern about management and services of funeral and visitors. About 65% of people in close contact with COVID-19 showed signs and symptoms of COVID-19; shortness of breath ( $p=0.008$ ), sore throat ( $p=0.002$ ) and fatigue were considerably reported more in expired group. The mortality rate was significantly higher among patients who suffered from the comorbidities of Diabetes Mellitus ( $p=0.04$ ) and Malignancies ( $P=0.03$ ).

**Conclusion:** several approaches are needed to control COVID-19 in Afghanistan such as; financially supporting the people in poverty, increasing the diagnostic kits, providing Personal Protective Equipment (PPE) for both health care workers and public, giving special attention to vulnerable people, and raise awareness about COVID-19 and to reduce the stigma toward this disease.

**Key Word:** Balkh, Afghanistan, COVID -19, Descriptive Epidemiology

**اهداف:** این مطالعه جهت بررسی اپیدمیولوژی توصیفی و چالش های کووید-۱۹ در شمال افغانستان، ولایت بلخ انجام شده است.

**میتود:** نتایج این مطالعه بر اساس تحلیل گذشته نگر از ۹۰۰ مورد مثبت کووید-۱۹ که توسط سیستم سرویلانس شمال افغانستان یا SSNA از تاریخ ۱۳۹۸/۱۲/۱۳ تا ۱۳۹۹/۰۳/۲۰ به ثبت رسیده است، مورد بررسی قرار گرفته است.

**نتایج:** با وجود وضع محدودیتهای شدید محافظتی در مقابل کووید-۱۹، نرخ بروز این بیماری در ولایت بلخ رو به افزایش است، که از یک مورد در ماه هوت به ۹۰۰ مورد مثبت در ماه جوزا رسیده است. بیشترین تعداد افراد مثبت از میان کدر طبی و امنیتی بوده است. نرخ مرگ و میر این بیماری در ولایت بلخ ۵,۱٪ بوده و ۸ مورد مرگ در خانه و نتیجه سه تن از مریضان بعد از فوت شان بدست آمده است. ۶۵٪ از افرادیک در تماس نزدیک با مریضان کووید-۱۹ بودند، علایم شبیه کووید را بروز داده اند. تنگی نفس ( $p=0,008$ )، گلو درد ( $p=0,008$ ) و خستگی در مریضهای فوت شده بیشتر به دست آمده است. مرگ و میر به طور چشمگیری در مریضانی که دیابت و سرطان داشتند، رخ داده است.

**نتیجه گیری و سفارشات:** جهت کنترل کووید-۱۹ در افغانستان نیاز به انجام اقدامات چند جانبه و چند شاخه میباشد: حمایت مالی از افراد فقیر جامعه، افزایش کیت های تشخیصی، تهیه و آماده سازی تجهیزات محافظتی فردی برای عموم مردم و اعم برای کدر طبی، توجه خاص و ویژه برای افراد آسیب پذیر، افزایش آگاهی رابطه به کووید و کاهش ننگ و عار دانستن این بیماری.

**کلمات کلیدی:** بلخ، افغانستان، کووید-۱۹، اپیدمیولوژی توصیفی

## Introduction:

The emergence of an acute respiratory disease, in Wuhan, China, in December 2019 <sup>(1)</sup>, has progressed to global pandemic <sup>(2, 3)</sup>. In February 2020, the World Health Organization designated the disease as COVID-19, which stands for coronavirus disease 2019 <sup>(4)</sup>. On January 30, World Health Organization (WHO) declared the COVID-19 pandemic as the sixth public health emergency of international concern, following H1N1 (2009), Polio (2014), Ebola in West Africa (2014), Zika (2016) and Ebola in the Democratic Republic of Congo (2019) <sup>(5)</sup>. As of June 21, 2020, (12:54 pm CEST), COVID-19 has spread worldwide with more than eight million confirmed cases and 461,715 deaths globally and it has become a major global health threat <sup>(6)</sup>. Iran is among the most affected countries in the world, which shares a large border to the west east with Afghanistan. Pakistan and Iran, which host some 90 percent of the world's 2.7 million Afghan refugees, are experiencing immense strain on their health systems and economies due to COVID-19 pandemic. For Afghan refugees who are employed as daily laborers in Iran, the

impacts of COVID-19 go far beyond health, lockdown measures made the refugees face the inability to meet even their most basic needs, and/or economic threats to their survival. Despite persistent risks, insecurity, shortage in medical equipment and services in Afghanistan, Afghans continue to return from Iran due to Iran's deadly coronavirus outbreak and subsequent economic stagnation. As in March 2020, 60,000 individuals returned to Afghanistan and 1500 individuals are currently returning every day <sup>(7-9)</sup>. The index case, a man who returned from Iran on 25, February 2020 confirmed the coronavirus pandemic to have spread in Afghanistan <sup>(10-12)</sup>. As of June 21, 2020, (12:54 CEST), there have been 28,833 confirmed cases, and 581 deaths across all provinces in the country <sup>(13)</sup>. The first case of coronavirus disease 2019 (COVID-19) was identified in Samangan (a northern province) in March, 2020, since then more than 2000 cases have been identified across the north of Afghanistan in 3 months. Given the challenges in expanding testing capacity and the restrictive case definition of persons under investigation, the true number of cases is likely much higher. In consideration of the foregoing, the purpose of the

present research is to detail the incidence, severity, epidemiologic findings, clinical manifestation, challenges, and outcomes and along with characteristics infection progress of COVID-19 in the north of Afghanistan. It is anticipated that these results will be of assistance to Afghanistan and global community, to better apprehend this novel disease, and to successfully manage it.

### **Method:**

The study's findings are based on North Region Surveillance System, and the data was collected from 3, March 2020 to 9, June, 2020. A total of 2446 upper nasopharyngeal specimens were collected during this period and 900 of samples were tested positive for SARS-CoV-2 with Real Time Reverse Transcriptase- Polymerase Chain Reaction (RT-PCR). Then the confirmed cases had been visited by Rapid Response Team Members (RRTs) and the data including; demographic features, clinical signs, underlying disease, the severity of disease, and their problems in dealing with COVID-19 had been entered in a predesigned surveillance system database, for those who were admitted to hospital and/or hardly accessible, the electronic database worksheet was completed by RRTs during telephone calls. The outcomes of patients with COVID-19 (death or recovered) were checked after two weeks of symptoms by telephone calls. We have also entered the result of three death body samples, who had died due to respiratory symptoms. The surveillance defines a suspected COVID-19 case as a patient with new onset of fever and/or respiratory tract symptom (e.g. cough, dyspnea), and other symptoms (chills, myalgia, headache, sore throat, diarrhea, smell and taste aberrancies), and/or close contact with

confirmed or suspected case, and/or travel history within the prior 14 days to a location where there is community transmission of SARS-CoV-2. A confirmed case is defined as a case with positive detection of viral nucleic acid by Real-Time Reverse Transcriptase Polymerase Chain Reaction (RT-PCR). Mazar-e-Sharif is a reference laboratory in the north of Afghanistan, which started testing for COVID-19 using RT-PCR test and remains the only laboratory with this capacity in the north of the country.

### **Statistical data analysis:**

The descriptive and analytic statistics of recorded data were calculated with SPSS software (version 20), categorical variables were summarized in the form of proportions and frequency tables and Chi-square, and Fisher's exact tests were used. Meanwhile, medians were calculated for conscious numerical variables. Patients were stratified by age. Age groups were defined as following: 0 through 20; 21 through 40; 41 through 50; 51 through 60; 61 through 70; 71 through 80; 81 through 90 and 90 through 100 years old.

### **Results:**

Balkh is the most affected province in the north of Afghanistan and the third infected province throughout the country. The north surveillance system collected samples from 2446 suspected cases from 3 March, 2020 to 9 June, 2020, the nasopharyngeal swab samples of 900 cases were tested positive by RT-PCR during this period. 46 deaths, 245 recovery cases were registered among positive cases. About 40% of all cases took place in fourth, fifth and eight districts of Mazar-e-sharif, Balkh (Table.1.)

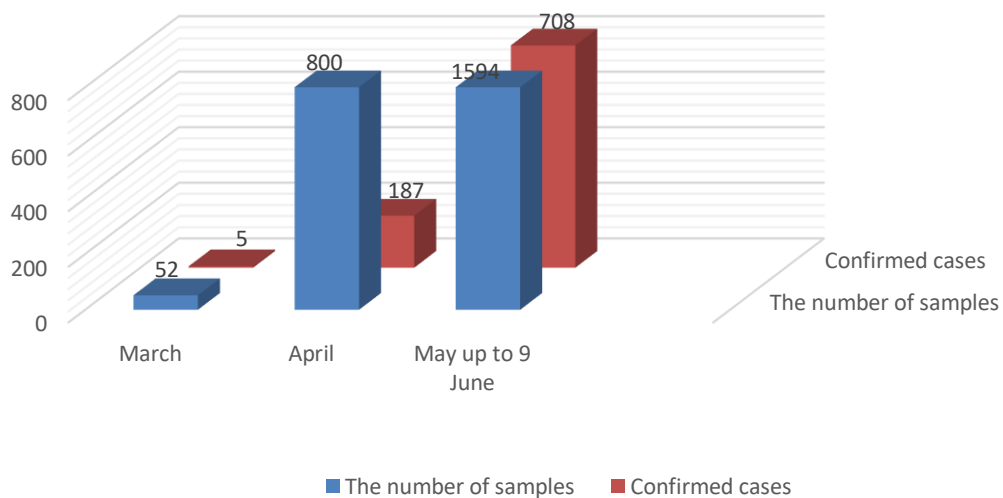
*Table.1. The number of cases in different districts of Mazar-E-Sharif, Balkh, Afghanistan*

Districts	Number of cases	percentage of cases
First	81	9%
second	99	11%
Third	63	7%
Fourth	153	17%
Fifth	63	7%
Sixth	72	8%
seventh	117	13%
Eight	90	10%
Ninth	54	6%
Tenth	81	9%

The incidence rate from five cases in March to 187 cases in April and 708 cases in May and 9 of June has increased, the monthly trend of sample taking and the number of confirmed cases are shown in Fig.1, while the diagnostic kits shortage

must be considered. The demographic characteristics are shown a male prepotency, for the occupations most of the cases reported form high exposure carriers such as: health care provider (15%) and security staff (14%) (fig.2).

*fig.1: The trend of CVOID-19 sample taking and confirmed cases in Blakh up to 9 June, 2020.*





**Fig.2:** The demographic characteristics of COVID-19 confirmed cases (n=900)

Almost half of the cases (56%) were reported among 20 to 41 years old that show the economical active groups (fig.2), the mean age of participants was  $42 \pm 16$  years old. Females and males mean age was  $35 \pm 5.2$  and  $44 \pm 9.3$  respectively and females were significantly younger than males ( $P < 0.05$ ). Within the last 14 days, 13.5% of the cases reported travel to Iran 0.7% to Kabul, 0.4% to India. About 30% of cases had second exposure being in contact with

confirmed cases and the rest of patient did not mention any past travel or being in contact with positive cases. The average body temperature in centigrade was  $37 \pm 6$  ( $n=342$ ), (the temperature had been taken by RRTs). The leading symptoms were fever, fatigue and sore throat shown in Table.2. Diabetes mellitus, hypertension and cardiovascular disease had the highest prevalence among all patients (Table.2).

**Table.2: clinical sign and comorbidities of COVID-19 patients in Balkh.**

<b>Clinical sign</b>	<b>Percentage (%), n= 850</b>
fever	66.5%
chills	14%
cough	27%
headache	22%
fatigue	32%
sore throat	30.2%
Shortness of breath	18%
diarrhea	13%
Nausea and Vomiting	10%
Abdominal pain	8%
Rhinorrhea	14%
Loss of test	13%
Loss of smell	14%
<b>Underlying disease</b>	<b>Percentage (%), n=850</b>
Diabetes mellitus	11%
hypertension	6%
Cardiovascular diseases	4.2%
Chronic liver disease	2%
Chronic kidney disease	3%
Chronic Lung disease	1.2%
Immunodeficiency	0.5%

In this study Case Fatality Rate (CFR) was calculated 5.1 percent. A higher number of males have died compared to females (13% female and 87% males;  $P<0.05$ ). Almost all of expired cases (who died due to COVID-19) at least have one underlying disease and all cases were manifested fever. About 76% of expired group ages was between ages 40 to 70 years old, no death had registered under age of 20, shown in Table3.

<b>Table.3: descriptive statistics of expired patients</b>	
<b>characteristics</b>	<b>n, %</b>
Cases	N=46 (100%)
<b>Mean of ages</b>	<b>55.4 ± 14</b>
20-40	4 (8.7%)
41-50	3 (6.5%)
51-60	11 (23.9%)
61-70	13 (28.3%)
71-80	11 (23.9%)
80-90	4 (8.6%)
<b>Clinical features</b>	<b>n=46 (100%)</b>
Fever	46 (100%)
Cough	30 (66.7%)
Headache	30 (66.7%)
Fatigue	41 (89.9%)
Sore throat	25 (55.6%)
Shortness of breath	10 (22.2%)
diarrhea	10 (22.2%)

The mean time between onset of symptoms and laboratory sample collecting date was  $11 \pm 8.5$  days, meanwhile this interval was 9.8 days in fatal cases that shows the severity of symptoms but not statistically meaningful ( $p= 0.4$ ). The mean time between date of symptoms onset and death was 14 days (SD=14, Min 2, Max, 30). The SARS-CoV-2 results of three expired cases were obtained one day after their death that rise concern about funeral and visitor's management and services. According to phone call tracing, we obtained that 8 cases has expired in their house and did not seek hospitalization due to stigma and fear of not being with family member and being alone. Meanwhile, the 65% of people who were in close contact of COVID-19 positive patients

shows the signs of COVID-19 which most of them were family members. Shortness of breath ( $p=0.008$ ), sore throat ( $p=0.002$ ) and fatigue were considerably reported more in expired group. The mortality rate was significantly higher among patients who suffered from the comorbidities of Diabetes Mellitus ( $p=0.04$ ).

### Discussion:

The infectivity of COVID-19 is high, as each infected person can transfer the virus to at least three other persons <sup>(14)</sup>. On February 25, 2020, the Afghanistan ministry of public health reported one imported case with confirmed COVID-19 from western (Herat province). Afterward, Afghanistan is experiencing a rapid rise in COVID-19 cases <sup>(12)</sup>. Since the first case of coronavirus disease 2019 (COVID-19) infection as identified in Samangan (a northern province) in March, 2020, more than 2000 cases have been identified across north of Afghanistan in just 3 months. But now, Balkh is the first considerably affected province in the north of Afghanistan and the third infected province throughout the country <sup>(15)</sup>. Given the challenges in expanding testing capacity and the restrictive case definition of persons under investigation, the true number of cases is likely much higher. These findings can indicate rapid increase in spread of COVID-19 in Balkh state. Although the containment measures [such as; universities and school suspension, Nowruz restriction (Persian new year that originally celebrated in Balkh), travel ban, shutdown of restaurant and all entertainment and recreational facilities, active surveillance (such as: self-isolation and quarantine, strict confirmed case monitoring, case isolation)] started when the number of confirmed cases was under 50 in Balkh, it seems these measures were not effective enough. There are several possible explanations for this issue. By containment, any working age adults were forced to stay at home, using their savings, unfortunately, this virus has also adversely affected made the economy of countries. In countries with higher GDP people



had more savings and governments supported families financially. Due to low GDP Afghanistan is one of the lowest income countries which lead to less savings and less supports from government. Consequently, people had to work to feed their families which caused a rise in the number of cases, especially in breadwinner adults. As it showed, the mean age of cases was 42 years old. The second possible reason for the increase in number of cases despite of containment and case tracing was, the only reference laboratory in northern Afghanistan with the capacity of analysing specimen for diagnosing COVID-19 cases which is situated in Mazar-e-sharif. The lack of local laboratories for diagnosing COVID-19 leads to a considerable delay in tracing and isolating patients <sup>(16)</sup>. Despite of containment and case tracing measures, people break the isolation and thus this leads to confirmation of more secondary cases. Observably, inadequate healthcare services and lack of personal protecting equipment were also seemed to be responsible for the rise in cases. In this study 65% of people who were in close contact with COVID-19 positive patients, showed the COVID-19 signs. Our finding suggested that the deaths have occurred between 14 days of symptoms onset. As it was reported from china, the average interval between onset of symptoms and death estimated to be about 13 days, which tend to be longer in patients under 65 years old and shorter in patients with age above 65 years <sup>(17)</sup>. The mean time between onset of symptoms and laboratory sample collecting date was 9.8 days, as the result of three expired cases were obtained one day after their death and 8 cases were expired in their house without seeking medical care that raised concern about funeral and visitor's management and services. Considering the afghan culture, attending funeral ceremonies is important, this delay in diagnosing even after the death of COVID-19 infected case can predispose the society with burden of this

disease and accelerate the spread among population.

As it was reported health care providers are among the most exposed to COVID-19 occupations <sup>(18)</sup>. The lack of personal protection equipment is not only affecting people, but also health providers. As it was shown most of the reported cases were comprised of health care providers. This will lead to less number of active healthcare workers and inadequate health care services. Five and one percent (46 deaths from 900 confirmed cases) of the COVID-19 positive cases expired. The Case Fatality Rate shows a higher rate than Pakistan (2.3%) and lower rate than Iran (6.29) <sup>(19)</sup>. Majority of the expired cases were above 40 years old and none was less than 20 years old. As Afghanistan is a male dominant country and most occupations were occupied by male genders, we observed a greater propensity toward male patients and 87% of all death has occurred among men in this study. The less susceptibility to death in female could be due to X chromosome and sex hormones which can affect innate and adaptive immune system <sup>(20)</sup>. The leading symptom of the expired cases was fever. Almost all the expired cases had fever. Sore throat, fatigue and shortness of breath were also reported significantly more in expired cases. In addition, less than one third of cases had diarrhoea, which is a less typical symptom of COVID-19. Our findings are the same as other countries since fever and fatigue are the most common symptom of COVID-19 virus in infected cases <sup>(19)</sup>. It was reported that people over 65 years old and with specific underlying conditions such as cardiovascular disease, chronic respiratory disease, diabetes mellitus, malignancy are more vulnerable to COVID-19 virus <sup>(21, 22)</sup>. In this study all expired cases had at least one underlying disease, such as cardiovascular, diabetes mellitus, chronic liver disease malignancy, and chronic neurological or neuromuscular disease. In comparison, in Iran most expired cases suffered from chronic

respiratory disease and chronic kidney disease, while in our study proportions were more evenly distributed<sup>(14)</sup>.

### Conclusion:

Several steps should be taken to limit the spread of COVID-19. **First**, the government should provide financial support to the people in helping them keeping their isolation and social distance. In addition, trained religious leaders should emphasize on the vitality of the matter and educate people to consider preventive measures. **Second**, more rapid diagnostic kits are needed to decrease the delay, thus isolating cases would be more efficient. **Third**, more personal protective equipment should be provided, especially in order to decrease the spread among health care providers. **Fourth**, specific attention should be paid to vulnerable people with underlying disease, so the case fatality rate would decline. The result of the study shows that older age, gender (male) and comorbidities elevate the risk of mortality among COVID-19 patients, who need special attention. The associated stigma of having COVID-19 is a strong factor for stopping people to seek medical care and this must be considered as a factor for disease spreading. The COVID-19 is a considerably global concern, it needs to be investigated deeply.

There are several limitations worth mentioning. In order to conclude more studies with bigger sample size are needed. One of the limitations of this recent study was that the rapid response team in Afghanistan would only measure the body temperature in order to screen people while other symptoms and underlying disease were only verbally asked, the answer to which tends to be biased (because of some cultural demands, Afghans are not comfortable to talk about their health conditions and some cases hide their health issues). Line list does not contain all the data for a complete evaluation and some changes in line list are needed. Due to lack of the diagnostic kits, only symptomatic suspected cases were

evaluated, which can lead to more case fatality rate and less case detection.

### Conflict of interest:

No competing interests exist with regard to this study.

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# Can Hot Summer Temperatures Stop the Prevalence of COVID-19 Cases?

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## Abstract

**Background:** The coronavirus disease 2019 (COVID-19) pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has spread to 219 countries/territories and affected millions worldwide. Due to its symptoms' similarity to flu in many people, the belief that the pandemic will end in the summer may hinder its control efforts in Afghanistan and elsewhere.

**Objective:** This review summarizes relevant information and experts' opinions on whether the pandemic will end in the summer.

**Methodology:** We carried out a purposive literature search using PubMed Central and Google Scholar and collected famous experts' opinions from news websites.

**Results:** Available information illustrates that SARS-CoV-2 can survive for several days on different surfaces with the potential to infect a susceptible population everywhere. Some studies have shown differences in the distribution of cases and/or disease rates between cold and warm countries; their findings are subject to major limitations including analysis of only short-period data, unavailability of real full-year data, and under-reporting of cases due to limited testing services in some warm or hot low and middle-income countries; therefore, these studies are inconclusive. In the absence of a vaccine, non-pharmaceutical social and preventive measures, and a sufficiently large susceptible population, herd immunity is unlikely to develop during the summer.

**Conclusions:** The pandemic is unlikely to end in the summer of 2020 without medical interventions. All countries including Afghanistan need long-term efforts to cope with the pandemic and to address incorrect public perceptions.

**Keywords:** COVID-19; SARS-CoV-2; summer; temperature; pandemic

## آيا د اوږي گرم موسم د کويډ-۱۹ ناروغۍ د پېښو مخنيوی کولای شي؟

### لنډيز

**شاليد:** د کرونا وایرس، چې د ۲۰۱۹ کال ناروغي يا (کويډ-۱۹) وبا په نوم يادېږي، د SARS-CoV-2 له امله رامنځته شوې. تر دې مهاله دا ناروغي ۲۱۹ هيوادونو او سيمو ته رسېدلې او په نړۍ کې يې ميليونونه خلک اغيزمن کړي دي. له دې امله چې ننې او نښانې يې په ډېرو ناروغانو کې والگي ته ورته دي، ځيني خلک فکر کوي چې دا ناروغي به هم موسمي وي او په دوبي کې به پای ومومي. دغه ډول فکر ممکن د دې ناروغۍ د کنټرول هڅې له خنډ سره مخ کړي.

**موخې:** د دې بياکتني موخه دا ده، چې اړونده علمي څيړنې او نظرونه خلاصه کړي څو په ډاگه شي چې په اوږي کې به د کويډ-۱۹ وبا پای ومومي او که نه؟

**ميتود:** د PubMid Central او گوگل سکالر د پلټنې سايټونو او هم نور معتبر خبري او معلوماتي ويبپاڼې مو د علمي ليکنو او کارپوهانو د نظرونو لپاره وپلټل.

**موندنې:** SARS-CoV-2 کولای شي په مختلفو سطحو کې د څو ورځو لپاره ژوندۍ پاتې شي او هم د نړۍ په هره برخه کې مساعد خلک اغيزمن کړي. ځينو څيړنو د سرو او تودو هيوادونو ترمنځ د کويډ-۱۹ د پېښو او يا يې په نخ کې توپير ښودلی، د جدي نيمگړتياوو له امله يې پايلې او وړاندوينې ممکن سمې لاسته رانشي. له بله اړخه، د وبا د مهار لپاره د ټولنيزو تدابيرو او اقداماتو شتون، په ټولنه کې د کافي مساعدو خلکو شتون او د واکسين نه شتون هغه لاملونه دي، چې نه پرېږدي د روان کال د اوږي تر پايه د ټولنيز معافيت هغه کچه، چې د وایرس د خپرېدو مخنيوی کوي، رامنځته شي.

**پايلې:** له طبي مداخلاتو پرته ناشونې ده، چې د ۲۰۲۰ کال د اوږي تر پايه د کويډ-۱۹ نړيواله وبا پای ومومي. د نړۍ ټول هيوادونه د افغانستان په شمول د دې ناروغۍ د مهار او هم د خلکو د غلطو انگيرنوسمولو لپاره اوږدمهاله هڅو ته اړتيا لري.

**کلیدي کلمات:** کويډ-۱۹، سارس کويډ-۱۹، دوبي، دتوخی دريجه، پانډمیک

### پېژندګلوی:

مړينې لامل کېږي<sup>(۴)</sup>. دغه ناروغي د ۲۰۱۹ کال په وروستيو کې پيل او په سرعت سره د نړۍ ډېرو هيوادونو ته خپره شوه او د ۲۰۲۰ ميلادی کال د مارچ د مياشتې په ۱۱ نيټه د نړيوالې روغتيايي ټولنې له خوا په رسمي توګه پانډيمي (Pandemic) يا نړيواله وبا وبلل شوه<sup>(۵)</sup>. د وبا له پيل څخه تر ۲۰۲۰ ميلادی کال د اپرېل ۲۷ نيټې پورې يې په ټوله نړۍ (۲۱۰ هيوادونو او سيمو) کې ۲۹۳۴۴۹۴ پېښې رامنځته شوې دي، له دې جملې څخه ۲۰۶۹۹۰ تنه ترې مړه شوي، په داسې حال کې چې ۸۷۸۸۱۶ تنه ترې رغيدلي دي. په افغانستان کې يې هم په همدې موده کې ۱۵۱۶ پېښې ثبت شوې دي، ۵۰ تنه ترې مړه شوي او ۲۰۷ نور ترې رغيدلي دي<sup>(۶)</sup>. د پېښو او مړينو شمير يی مخ په ډيريدو دی، يعنی د وبا له پيل څخه تر دې دمه (۲۰۲۰ ميلادی کال د نومبر ۱۷ نيټه، Updated GMT 08:53 GMT) يې په ټوله نړۍ (۲۱۹ هيوادونو او سيمو) کې يی شمير ۵۵۳۹۹۵۲۹ پېښو ته رسېدلی دی، چې له دې جملې څخه ۱۳۳۳۲۳۰ تنه ترې مړه شوي، په داسې حال

دکويډ-۱۹ ناروغۍ سبب د کرونا نوی وایرس دی، چې د لومړي ځل لپاره د چېن د اوهان په ښار کې د يوې شديدې تنفسي ناروغۍ (سینه بغل) په څير راڅرګند شو. د دې ناروغۍ سببي وایرس د نړيوالې روغتيايي ټولنې له خوا د ۲۰۱۹ ميلادی کال د نوي کرونا وایرس 2019-nCoV په نوم په موقتي توګه ونومول شو<sup>(۱)</sup>. له دی څيړنو وروسته دغه وایرس ته Severe Acute Respiratory Syndrome (SARS) – CoV-2 نوم رکړل شو او ترې رامنځته شوې ناروغي د کرونا وایرس ۲۰۱۹ ناروغۍ (Coronavirus disease 2019) يا COVID-19 په نامه ياده شوه<sup>(۲-۳)</sup>. په دې ناروغۍ اخته کسان معمولاً تبه، ټوخی، او سستي لري، په داسې حال کې چې په ډېرو کاهلانو او کوچنيانو کې يې اعراض والگي ته ورته وي، خو لږ شمير ناروغان يې وخيم حالت لري او په تيزۍ سره په Acute respiratory distress syndrome يا تنفسي عدم کفايه او د مختلفو ارګانونو په عدم کفايه اخته کېږي او بالاخره د

کې چې ۳۸۵۳۲۹۶۹ تنه ترې رغیدلي دي. په افغانستان کې یې هم شمیره د وبا له پیل څخه تر دې دمه ۴۳۶۲۸ پیښو ته لوړه شوې ده، ۱۶۳۸ تنه ترې مړه شوي او ۳۵۱۳۸ نور ترې رغیدلي دي<sup>(۹)</sup>. د وایرس سرایت، د کویډ-۱۹ نوې پیښې رامنځته کېدل او له دې امله مړینې تر دې دمه په ټوله نړۍ کې ادامه لري.

نه یوازې په افغانستان، بلکې په ټوله نړۍ کې ډېر خلک فکر کوي، چې د کویډ-۱۹ ناروغي به هم د نورو موسمي وایرسو ناروغيو، لکه والګي او یا انفلوانزا په شان د یخنۍ په موسم کې زیاتې پیښې ولري او د گرمۍ په موسم کې به یې پیښې کمې او یا ناروغي له منځه لاړه شي، یعنې دوی په دې باور دي، چې په اوږې کې به د موسم له گرمېدو سره د سارس کرونا وایرس-۲ خپراوي ودرېږي او د کویډ-۱۹ ناروغي به مهار او ورکه شي<sup>(۹-۷)</sup>. دغه فکر په ټولنیزو رسنیو کې له خامو معلوماتو څخه د غلط فهمۍ له امله رامنځته شوی. د بېلګې په ډول، ډېری څیړونکي، چې د سارس کرونا وایرس-۲ موجوده ارقام تحلیلوي او په راتلونکي کې د دې ناروغۍ د پیښو او یا یې د موسمیت په اړه وړاندوینې کوي<sup>(۱۱-۱۰)</sup>، له جدي نیمګړتیاوو سره مخ دي. لومړی دا، چې د کویډ-۱۹ ناروغي بیخي نوې ده، د موسمیت په اړه یې کره شواهد او رښتیني ارقام نشته او هغه څیړنې، چې د ریاضيکي مودلینګ پر بنسټ په مختلفو موسمونو کې د لنډې مودې د ارقامو پر بنسټ د ناروغيو د رامنځته کېدو وړاندوینې کوي او یا د ناروغيو د له منځه تللو د وخت په هکله وړاندوینې کوي<sup>(۱۲)</sup>، هغه د یوې نوې ناروغۍ لپاره د نړۍ په هره برخه کې سمې نه څیږي. نو له دې امله ډېرساینسپوهان په دې توافق لري، چې ټول مودلونه سم نه وي، په داسې حال کې چې یو څو یې ګټور هم وي. له بل پلوه په ځینو تودو، ټیټ او منځني عاید لرونکو هیوادونو کې د ناروغيو د تشخیصه آزمویښو کمه او یا نه ترسره کېدنه د ناروغۍ د پیښیدو د ټیټ تخمین سبب کېږي، نو له دې امله د کویډ-۱۹ د نړیوالې وبا په اوسني حالت کې د موسم گرمېدا ته د خلکو دغه ډول خوشبیني ممکن د دې وبا د کنټرول هڅې ټکنې کړي. په دغه لیکنه کې مو د دې پوښتنې د ځواب لپاره اړونده څیړنې او د ځینو څیړونکو او کارپوهانو نظرونه راټول او خلاصه کړي دي.

#### میتود:

د اړوندو علمي لیکنو لپاره د PubMid Central او گوګل سکالر د پلټنې ساینټونو او نور معتبر خبري او معلوماتي ویبپاڼې مو د کارپوهانو د نظرونو لپاره وپلټل. د لاسنه وضاحت لپاره مو د سارس کرونا وایرس-۲ فزیکي خواص او خپراوي، د کویډ-۱۹ پر پیښو د موسم تاثیر او ټولنیز معافیت د اپیدیمیولوژیکو او ساینسي معلوماتو په رڼا کې څیړلی او شلی دی.

#### موندنې او شننې:

##### د سارس کرونا وایرس-۲ جوړښت، خواص او خپراوي:

د غه وایرس د نورو کرونا وایرسونو په شان د پوښ لرونکو وایرسونو (Enveloped viruses) له جملې څخه دی، چې د یوې شحمي پردې په واسطه، چې د تودوخې پر وړاندې حساسه ده، پوښل شوی. له همدې امله پوښ لرونکي وایرسونه د له پوښ پرته وایرسونو په نسبت د تودوخې پر وړاندې ډېر حساس دي. د یخنۍ په موسم کې یې شحمي پوښ د رږ په څیر شخ او کلکېږي څو په محیط کې ژوندی پاتې شي، خو په گرمۍ کې یې دغه پوښ نازکېږي او د تخریبیدو چانس یې ډېرېږي. د همدغه پوښ له امله پوښ لرونکي وایرسونه په لوړه کچه موسمي تمایل لري او د موسمي ناروغيو سبب کېږي<sup>(۱۳)</sup>. د سارس کرونا وایروس-۲ سرایت هم پیچلی دی، چې د ناروغ کس د خبرو، پرنجی، او یا توخي پر مهال د هغه له پوزې او یا خولې څخه په کوچنیو قطرو یا څاڅکو کې راوځي. په یوه توخي کې د ۳۰۰۰ په شاوخوا کې څاڅکي موجود وي، چې هر څاڅکی یې بیا په لسگونو زره ویروسونه له ځان سره لري. دغه وایرس لرونکي څاڅکي نسبتا درانده وي، لیرې نه ځي او په ځمکه یا نورو سطحو لویږي. اما کوچني څاڅکي یې، چې جسامت یې له ۱-۵ مایکرومتره (د ویښته له ډېوالي څخه ۳۰ کرته کوچنی) وي، په هوا کې د درېیو ساعتونو لپاره خورند پاتې کېږي<sup>(۱۴)</sup>. که بل څوک یې تنفس کړي، په وایرس باندې منتن کېدای شي. له ناروغ پرته، هغه خلک، چې په دغه وایرس اخته وي، څو اعراض او علایم نه لري، هم وایرس بل انسان ته لیږدولای شي<sup>(۱۵-۱۶)</sup>. کله چې وایرس لرونکي څاڅکي په ناروغ، بل روغ انسان، ځمکه او یا هم نورو توکو او جسمونو باندې ولویږي او بل روغ شخص له په وایرس ککړ انسان، ځمکې او یا هم جسمونو سره تماس پیدا کړي او بیا پر خپل مخ (سترگو، پوزې او خولې) لاسونه ومیني، نو دی

هم په وایرس اخته او منتن کېږي او بالاخره په کویډ ۱۹ ناروغۍ اخته کېږي. څېړنو ښودلې ده، چې دغه وایرس د سانتي گراد په ۲۱-۲۳ درجه تودوخه او ۶۰٪ نسبي رطوبت کې په مسي سطحو ۴ ساعته، په لرگي لرونکو سطحو باندې ۲۴ ساعته او په پلاستیک او اوسپنیزو سطحو باندې ۲-۳ ورځې ژوندی پاتې کېدای شي<sup>(۱۴)</sup>. څېړنو دا هم ښودلې ده، چې له ستوني څخه په اخستل شوو سمپلونو کې د سارس کرونا ویروس-۲ اندازه د سارس کرونا د وایرسونو په پرتله، چې په ۲۰۰۳ کال یې وبا رامنځته کړې وه، زیاته ده. د سارس کرونا وایرس-۲ ناروغۍ له اعراضو وړاندې، د ناروغۍ په جریان کې او همدا راز په ډېرو پېښو کې د اعراضو له کمیدو وروسته هم نورو خلکو او ټولنې ته لیردول کېږي<sup>(۱۷)</sup>، په داسې حال کې، چې د ۲۰۰۳ سارس وایرس د ناروغۍ له پیل لس ورځې وروسته په عمده ډول خپرېږي<sup>(۱۸)</sup>، ځکه په تنفسي لارو کې یې د وایرسونو اندازه د اعراضو له پیل وروسته متوسطه او په لسمه ورځ لوړې کچې ته رسېږي<sup>(۱۹)</sup>. له دې امله یې وبا د سارس کرونا ویروس-۲ وبا په پرتله په لنډه موده کې په آسانه کنټرول شوه. د پورته ذکر شویو فکتورونو له امله شونې ده، چې د کویډ-۱۹ نړیوالې وبا کنټرول د ۲۰۰۳ کال د سارس وبا په پرتله ډېر وخت واخلي او په راتلونکي اوږي کې هم له منځه لاړه نه شي.

له بله اړخه د تودوخې د مختلفو درجو مستقیمه اغیزه تر اوسه د سارس کرونا ویروس-۲ په له منځه وړنه باندې معلومه نه ده، خو هغه څېړنې، چې د کویډ-۱۹ عامل ته ورته په نورو سارس وایرسونو ترسره شوي دي، ښودلې ده چې د سانتي گراد په ۵۶ درجو کې په ۱۵ دقیقو کې د نورو سارس وایرسونو ۱۰۰۰۰ پارټیکله له منځه ځي. دا ډېره زیاته تودوخه ده، که اوبو ته د سانتي گراد ۵۶ درجي تودوخه ورکړل شي او یو څوک پرې ولاړي، نو د بدن له پوستکي پټري یا خړوکي اړولې شي<sup>(۸)</sup>. که دغه موندنې د کویډ-۱۹ ناروغۍ د سببي عامل لپاره صدق هم وکړي، نو د وایرس بالقوه مقاومت ښيي. له نیکه مرغه، د سارس کرونا ویروس-۲ د ځینو ځانگړو کیمیاوي توکو په واسطه په آسانه له منځه تللی شي، دغه وایرسونه له ککړو سطحو څخه په یوه دقیقه کې د الکولو (۶۲-۷۱٪)، هایدروجن پر اکسایدو (۵٪)؛ او ۱، ۱٪ سوډیم هایپوکلورایت بلیچو په واسطه له منځه ځي. خو ۰،۰۵٪ بنزایل کلونیم کلوراید او ۰،۰۲٪ کلورهیگزیدین ډای گلوکانیټ ورباندې لږ موثر دي<sup>(۲۰)</sup>. په شیشه یې او اوسپنیزو سطحو یې درې ورځې ژوندي پاتې

کېدل د ناروغۍ په خپریدو کې مهم رول لوبولای شي، په داسې حال کې چې د له منځه وړونکو توکو سم استعمال د دې وبا عمر لنډولای شي. خو له بده مرغه د خلکو ناپوهي او نوموړو کیمیاوي توکو ته لاسرسی د افغانستان په هره برخه کې ممکن نه دی. پر دې سربېره، ټولنیز شرایط لکه فقر، ناپوهي، بې غوري، د خلکو خوځښت، روغتیايي خدمتونه، ناامني او جگړې هم د سارس کرونا ویروس-۲ خپریدو دوامداره او تیزولای شي.

**د کویډ-۱۹ نړیوالې وبا د سیر په هکله د وړاندوینکو څېړنو نیمگړتیاوې:**  
د حقیقي ارقامو په نه شتون کې هغه څېړنې، چې د کویډ-۱۹ پانډیمي په هکله د لنډې مودې ارقام تحلیلوي او وړاندوینې کوي، ډېرې نیمگړتیاوې لري<sup>(۱۲-۱۱)</sup>. ممکن وړاندوینې یې د یوې نوې ناروغۍ لپاره د نړۍ په هره برخه کې سمې ونه څیږي. د ماسچوسیت د انستیتیوت یوه ډله څېړونکو د ټولې نړۍ د کویډ-۱۹ پېښې تحلیل کړې دي او موندلې یې دي چې د نړۍ د ټولو کویډ-۱۹ پېښو ۹۰٪ یې په هغو سیمو کې رامنځته شوي چې له جنورۍ څخه تر مارچ میاشتو پورې د ورځنۍ تودوخې اوسطه درجه یې د سانتي گراد له ۳-۱۷ درجه لري سانتيگراد او په هوا کې یې مطلق رطوبت له ۳-۹ گرامه في متر مکعب دی. ۶٪ پېښې یې په هغو هیوادونو کې رامنځته شوې دي چې د ذکر شوې مودې د تودوخې اوسطه درجه یې له ۱۸ درجو سانتيگراد اومطلق رطوبت یې له ۹ گرامه في متر مکعب څخه لوړ وه<sup>(۱۱)</sup>. څېړنې د محدودیتونو په پام کې نیولو سره، په ډېر احتیاط سره داسې نتیجه ګیري کوي چې د څېړنې پایلې یې دا معنی نه لري چې د راتلونکي اوږي په موسم کې، چې د نړۍ په اکثره هیوادونو کې تودوخه او رطوبت زیاتېږي، د کویډ-۱۹ پېښې به رامنځته نه شي او یا به خورا ډېرې کمې شي، بلکه وړاندیز کوي چې د موسم او رطوبت رول باید د سارس کرونا-۲ وایرسونو پر سرایت کې نور هم وڅیړل شي<sup>(۱۱)</sup>. نورو څېړنو هم تودوخې، رطوبت او جغرافیایي موقعیت تاثیرات د کویډ-۱۹ پر پېښو څېړلي دي. دوې موندلې چې سارس کرونا وایرس-۲ په هغو سیمو کې خپور شوی چې د تودوخې درجه یې د سانتي گراد له ۵-۱۱ درجې پورې وه. یادې څېړنې له دې نتیجې څخه داسې انګیرنه کوي چې د سارس کرونا وایرس-۲ د نورو ورته وایرسونو په څیر موسمي خواص لري<sup>(۱۱)</sup>. دغه ډول څېړنې ډېرې نیمگړتیاوې لري، لکه د یوې نوې ناروغۍ لپاره یوازې د درې میاشتو موجوده ارقام، چې د یخنۍ پر مهال راټول شوي،



تحليليدل؛ د کويډ-۱۹ د ټول کال د حقيقي ارقامو نه شتون؛ او همدا راز له تودوخې او رطوبت پرته نور عوامل، چې د کويډ ناروغۍ د پېښو په رامنځته کېدو اثر لري، په پام کې نه دي نيول شوي، لکه د سرایت بڼه او تيزوالی، ځايي نفوس، د خلکو خوځښت، طبي خدمتونه او تست کېدنه او داسې نور. د يونيورسيتي کالج لندن ځينو څيړونکو په يوه نوې څيړنه کې د نورو عادي کرونا وایرسونو، لکه HCoV-NL63 او HCoV-OC43 د تيرو وختو ارقام تحليل کړي دي، چې د فبرورۍ په مياشتې کې يې پېښې په لوړه کچه او په اوړي کې ټيټ حد ته رسېږي. د همدې څيړنې مشر Rob Aldridge وايي، چې زموږ د قياس پر بنسټ په راتلونکي اوړي کې د کويډ-۱۹ ناروغۍ د ورو او دوامداره خپراوي احتمال شته، خو بايد دا هم له پامه ونه غورځول شي، چې د ډېرو مساعدو وگړو (Susceptible population) د شتون په صورت کې ممکن د کويډ-۱۹ لپاره سرچېه او په راتلونکي ژمي کې بيا راوگرځي. له بله اړخه، موږ په دې هم نه پوهېږو چې آيا راتلونکي اوړي کې به د دې ناروغۍ مخنيوی وشي او که نه، ځکه په ټولنه کې د کويډ-۱۹ ناروغۍ لپاره ډېر مساعد خلک شته چې تر اوسه متن شوي نه دي، له همدې امله بايد روغتيايي لارښوونې په پام کې ونيول شي او پر دې اعتراف هم کوي چې د سارس وېروس ايپيډيمي (وبا)، چې په ۲۰۰۳ ميلادي کال کې رامنځته شوې وه، په لنډه موده کې کنټرول شوې وه، نو له دې امله د حقيقي ارقامو په نه شتون کې د کويډ-۱۹ وبا په موسميت سم قياس نه شي کېدای.<sup>(۷)</sup> د هارورډ ميډيکل سکول څيړونکو د سارس کرونا وېروس ۲ سرایت په آسيا کې څيړلی دی. هغوی موندلي، چې د چين په سړو او وچو سيمو (جيلين او هيلونگ جيانگ) کې د کويډ-۱۹ پېښې په چټکۍ سره رامنځته شوې دي. د دې ترڅنگ، دغه ناروغي په حاره (گرمواستوايي) سيمو (د چين گوانگزي او سينگاپور) کې هم په چټکۍ سره خپره شوې ده. څيړونکي له دې پايلو څخه داسې استنباط کوي چې د سارس کرونا وېروس ۲ حساسيت د موسمي تغيراتو په وړاندې د تمې خلاف کم دی. نوله دې امله به په روان پسرلي او راتلونکي اوړي کې د موسم په گرمېدا او د رطوبت له زياتوالي سره سره د کويډ-۱۹ پېښې کمې نه شي.<sup>(۸)</sup> له بل پلوه، نړيوالې وباگانې ډېر کله نورو موسمي وباگانو ته ورته نه وي. د بېلگې په ډول، د هسپانوي والگي نړيوالې وبا پېښې په اوړي کې لوړې کچې ته رسيدلې وې، په داسې

حال کې چې په نورو عادي وباگانو کې د والگي پېښې د ژمي په موسم کې لوړېږي.<sup>(۷)</sup> بن نيومن، چې د ريډنگ پوهنتون څيړونکی دی، وايي چې د کويډ-۱۹ ناروغۍ په کړنگ ژمي کې د چين په اوهان ښار کې پيل شوې او په چټکۍ سره په سړو سيمو، لکه آيسلنډ او همدا راز اکوادور او برازيل کې، چې گرمې او استوايي سيمې دي، خپره شوه. دا ناروغي له ژمي نه وروسته په پسرلي (گرمي يې تر ژمي ډېره ده) کې په ټوله نړۍ کې په شدت سره خپريږي، له همدې امله بايد طبيعت ته د انتظار پر ځای له دغه وایرس سره جگړه وشي.<sup>(۷)</sup> مايکل سپېنر، چې په امپيرل کالج لندن کې وایرالوجست دی، په دې عقیده دی، چې موسمي بدلونونه به د دې وایرس په خواصو ډېر خفيف تاثير وکړي اودغه بدلون (د موسم د گرمېدا له امله د پېښو کمښت) هيڅکله د ټولنيز واټن (Social distancing) ځای نه شي نيولای.<sup>(۷)</sup> مشهور آلماني وایرالوجست کريسچېن ډروستين هم په دې فکر دی، چې که څه هم د هېواد هڅو د وایرس د خپراوي مخه نيولې او د وایرس د تکثر بنسټيز نمبر (Basic reproduction number or R0)، يا هغه فکتور، چې يو ناروغ په اوسط ډول څو تنو ته ناروغي لېږدوي، تر يوه ټيټ شوی دی، ممکن بيا لوړ او په جرمني کې د ناروغۍ دويمه څپه رامنځته شي.<sup>(۲۲)</sup> دغه ټولې څيړنې په دې دلالت کوي، چې په لنډه موده کې د کويډ-۱۹ پانډيمی له منځه وړنه ممکنه نه ده.

**د واکسين په نه شتون کې د ټولنيز معافيت د توليد لپاره وخت ته اړتيا:** د کويډ-۱۹ ناروغۍ د اعراضو له پيل وروسته له ۷-۱۴ ورځو په موده کې انتي باډيگاني توليديږي. د انتي باډي تاثير له وجود څخه د وایرس له پاکېدو وروسته هم به د څو اونيو لپاره پاتې کېږي او د بيا متن کېدو مخنيوی يې کوي.<sup>(۲۳)</sup> د ۲۰۲۰ کال د اپريل له ۲۷ نيټې څخه د مې تر ۱۱ نيټې پورې په هسپانيه کې په ملی کچه په ۶۱۰۷۵ تنو يوه لويه څيړنه، ترسره شوه. په پايله کې يوازې په ۵٪ وگړو کې د کويډ-۱۹ انتي باډياني وليدل شوې.<sup>(۲۴)</sup> نور څيړونکي هم په دې باور دي، چې په اروپايي هيوادونو او د امريکا په متحده ايالتونو کې، چې ډېرې زياتې پېښې او وافيات لري، د ټولنيز معافيت اوسنی کچه لا هم ډېر ټيټه ده. که د سارس کرونا وایروس ۲ هر ټولنيز گروپ ته سرایت وکړي، په ناروغۍ يې اخته کولای شي، نو په دې اساس ممکن دغه هيوادونه په راتلونکي کې د کويډ-۱۹ ناروغۍ له مختلفو څپو سره مخامخ شي.<sup>(۲۲)</sup> يوه ټولنه هغه وخت له يوې ساري ناروغۍ څخه ژغورل کېږي، چې په

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ټولنه کې د ډله ییز معافیت مطلوبې کچې ته ورسېږي، په داسې حال کې چې د کویډ-۱۹ لپاره دغه کچه له ۵۰٪ څخه تر ۶۷٪ پورې ده. د یوه مؤثرواکسین له شتون او تطبیق پرته د ډله ییز معافیت یادې کچې ته رسیدل ډېر وخت غواړي. له بلې خوا، د واکسین جوړونه او بیا یې په غریبو ملکونو، لکه افغانستان کې تطبیق ډیر وخت غواړي، نوله دې امله ناشونې ده چې د راتلونکي اوږد تر پایه په افغانستان او نورو غریبو ملکونو کې د ټولنیز معافیت اړینه کچه رامنځته شي.

## پایلې:

د سارس کرونا وایرس-۲ کم حساسیت د موسم د گرمېدا پر وړاندې؛ په ټولنه کې د کافي مساعدو خلکو شتون؛ تر دې دمه د واکسین نه شتون؛ او د ټولنیز ډله ایز معافیت ټیټه کچه هغه لاملونه دي چې له امله به یې د کویډ-۱۹ پیښې د موسم له گرمېدا سره هم په ۲۰۲۰ کال کې په ټوله نړۍ او همدا راز افغانستان کې رامنځته کېږي. د افغانستان په شمول ممکن د نړۍ په ډیرو هیوادونو د کویډ-۱۹ ناروغۍ مختلفې څپې رامنځته شي. د سارس کرونا وایرس-۲ د چټکې خپرېدا وړتیا لري، خو ځانګړي کېمیایي توکي یې په آسانه او لنډه موده کې له منځه وړلای شي، نو له دې امله ورسره مبارزه کیدای شي.

## سپارښتنې:

دولتي چارواکي او د عامې روغتیا وزارت مسؤلین او نورې اړونده ادارې باید د موسم گرمېدا ته منتظر پاتې نه شي او د کویډ-۱۹ ناروغۍ د مهار لپاره د ایپیدیمولوژیکو معلوماتو پر بنسټ اوږدمهاله پلان ترتیب او پلي کړي. ګرځندیز او اړونده نور بندیزونه باید کټګوري شي او د ایپیدیمولوژیکو معلوماتو په پام کې نیولو سره په تدریجي توګه لرې شي. د پیښو موندنې او د رغېدلو خلکو د پیدا کولو او تعقیب پروسه باید د عامې روغتیا وزارت غښتلې کړي، څو د بندیزونو د لرې کېدو پر مهال پیښې پیدا، جلا او تداوي شي. ولس باید د روغتیايي ادارو لارښوونې عملي کړي او ټولنیز واټن په پام کې ونيسي او پر دې سربېره باید د امکان تر بریده له بې ځایه ګڼې ګونې او خوځښت څخه ډډه وکړي او وقایوي تدابیرو ته جدي پاملرنه وکړي.

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## Post Evaluation of a Tuberculosis Awareness Campaign in Afghanistan

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### Abstract

**Introduction:** The lack of awareness about the Tuberculosis (TB) symptoms and stigmatization of the disease; are the significant threats in controlling TB prevalence. During the third and fourth quarters (Q3-Q4) of year 2017, the National TB control program in Afghanistan launched TB awareness campaigns in 21 provinces in order to raise and enhance awareness about TB including; its signs, symptoms, prevention and treatment which will eventually enhance the case-finding rate of TB.

**Objective:** The objective of this study was to collect and analyze process indicators that help in interpreting and evaluating the impact of the awareness campaigns in terms of knowledge provision and TB cases notification rate as being implemented in the first 10 provinces.

**Methodology:** The impact and process findings were evaluated using the RE-AIM framework. The expected outcome was measured indirectly through comparing the case notification rate during Q3 and Q4 of year 2017 with the same quarters of the previous year (2016) in targeted provinces using TB surveillance data. Applying the Difference in Difference (DID) technique, the case notification rate was also compared among provinces that received the intervention and those provinces that were excluded from the campaign.

**Results:** The results of this evaluation indicate that the campaign had no impact on CNR in implemented provinces. In general, the case notification rate was higher in provinces as compared to case treatment in both Q3 (OR: -4.6; 95% CI: -26.3 \_ 10.1) and Q4 (OR: -8.1; 95% CI: -24.5 \_ 15.2).

**Conclusion:** Despite of the many implementation shortages, external factors, such as unfavorable security situations also contributed on the impact of TB awareness campaigns on CNR in Q3 and Q4 of year 2017. Consequently, the TB awareness campaigns showed no impact on CNR in implemented provinces.

**Key words:** Tuberculosis, Awareness campaign, Case Notification Rate, RE-AIM Framework

## چکیده

**پس منظر:** سطح پایین آگاهی مردم در مورد اعراض و علائم مرض توبرکلوز و موجودیت نگرش منفی (Stigma) پیرامون مرض و مریضان توبرکلوز در بین افراد جامعه از جمله تهدیدهای جدی فرا راه کنترل بیماری سل در افغانستان است. در جریان ربع سوم و چهارم سال ۲۰۱۷ میلادی، پروگرام ملی کنترل توبرکلوز یک برنامه آگاهی دهی وسیع را به منظور بلند بردن سطح آگاهی مردم و در نهایت افزایش میزان واقعه یابی توبرکلوز، در ۲۱ ولایت کشور راه اندازی کرده بود.

**اهداف:** هدف از این مطالعه جمع آوری، تجزیه و تحلیل شاخص های روند تدویر این برنامه آگاهی دهی است که ما را در تفسیر نتایج کمپاین آگاهی دهی و تاثیر این کمپاین بر میزان واقعه یابی توبرکلوز در ۱۰ ولایتی که این برنامه بصورت ابتدایی تطبیق گردیده بود، کمک میکند.

**روش تحقیق:** جهت بررسی اثرات و دانستن چگونگی روند تدویر این برنامه آگاهی دهی از چارچوب RE-AIM استفاده بعمل آمده است. نتیجه مورد انتظار (تاثیر برنامه آگاهی دهی بالای واقعه یابی توبرکلوز) به طور غیر مستقیم از طریق مقایسه میزان واقعه یابی توبرکلوز در جریان ربع سوم و چهارم سال ۲۰۱۷ با دو ربع مشابه سال ۲۰۱۶ با استفاده از ارقام سرویلانس توبرکلوز؛ پیمایش گردیده است. همچنان، درین مطالعه میزان واقعه یابی بین ولایاتی که کارزار آگاهی دهی در آن عملی شده بود با ولایاتی که از این کارزار خارج شده بودند، با استفاده از تکنیک (Difference in Difference (DID)، مقایسه گردیده است.

**نتایج:** نتایج این ارزیابی نشان می دهد که این کمپاین آگاهی دهی هیچ تاثیری روی بلند بردن میزان واقعه یابی توبرکلوز، در ولایات تطبیق شده، نداشته است. به طور کلی، میزان واقعه یابی توبرکلوز در ولایاتی که این کارزار عملی نشده بود به مقایسه ولایاتی که کارزار آگاهی دهی در آنها راه اندازی شده بود در هر دو ربع، سوم (OR: -4.6; 95% CI: -26.3 \_ 10.1) و چهارم (OR: -8.1; 95% CI: -24.5 \_ 15.2) بالاتر بود.

**نتیجه گیری:** برعلاوه کاستی های موجود در جریان کمپاین آگاهی دهی توبرکلوز فکتور های خارجی، مانند امنیت، نیز بالای میزان واقعه یابی توبرکلوز اثر داشته است. در نتیجه کمپاین آگاهی دهی هیچ نوع اثر مثبتی را بالای میزان واقعه یابی توبرکلوز نداشته است.

**کلمات کلیدی:** توبرکلوز، کمپاین آگاهی دهی، میزان واقعه یابی، چارچوب RE-AIM

## Introduction:

**T**uberculosis (TB) is a contagious, airborne disease that ranks among the top 10 causes of death worldwide (WHO, 2017). In year 2016, there were around 10.4 million new TB cases and 1.8 million deaths as a result of this disease globally, of which 95% occurred in low- and middle-income countries (WHO, 2016). TB is more prevalent among poor people due to many factors, including malnutrition and overcrowding (Rocha et al., 2011). However, TB also exacerbates poverty by increasing health expenses and decreasing productivity (Rocha et al., 2011). This public health problem is highly associated with social stigmatization, which discourages people from seeking care (Court wright & Turner, 2010). The common cause of TB stigma is the perceived contagiousness of the disease (AhChing., 2001). Also, the lack of knowledge from the transmission routes of TB

contributes to stigma (Mak et al., 2006). Early detection and appropriate treatment are key factors in TB control. However, delay in diagnosis and treatment spreads the disease in the community (Raviglione et al., 2012). Afghanistan is a low-income country with a 39.1% poverty rate (World Bank, 2017). This country is among the high TB burden countries (WHO, 2016). According to the WHO's latest estimations, the TB incidence rate for all forms is 189 per 100,000 populations per year and the TB mortality rate is 33 per 100,000 populations per year (WHO, 2017). In Afghanistan, a significant number of TB cases are undetected, therefore they remain untreated (Sabawoon, 2012). The country detected only 66% of all estimated incidence number of TB cases in 2016 (WHO, 2017). Low awareness of TB symptoms, delays in care seeking, low access to services and stigmatization are significant threats toward TB control in this

country; often, infectious TB patients remain for a long time in the community prior to diagnosis, thereby worsening individual outcomes and increasing the chance of person-to-person transmission (Murray et al., 2012; Sabawoon, 2012).

Education and Communication (IEC) package for TB was also attached to the program to raise the awareness of TB among people who attend health facilities (BPHS, 2010).

It is widely recognized that clinical approaches alone are not comprehensive enough to reach the global goal of TB control and finally elimination (Stop TB partnership, 2008). To overcome this challenge, the Advocacy, Communication and Social Mobilization (ACSM) department of NTP, in collaboration with donors and relevant Non-Governmental Organizations (NGOs), designed a TB awareness campaign nationwide aiming to increase peoples' awareness regarding signs, symptoms, prevention and treatment of TB, to decrease the associated stigma, and to increase the rate of case finding throughout the country. The campaigns covered 21 provinces of Afghanistan during the 3rd and 4th quarter (Q3 – Q4) of the year 2017. This study aims to evaluate the impact of the awareness campaigns on case finding in the 10 provinces that were covered during Q3 of 2017.

### **Objectives:**

To collect and analyze process indicators that help in interpreting the impact results of the campaign and understanding the variation in campaign implementation across the targeted provinces. To evaluate the impact of the awareness campaigns on TB case notification rate (CNR) in initial 10 targeted provinces.

### **Methodology:**

#### **RE-AIM**

We used the RE-AIM evaluation framework for the process and impact evaluation of the awareness campaign (Glasgow et al, 1999). This framework is appropriate for this study because it

evaluates the campaign not only by its efficacy but also by the process of its delivery. Through this framework the relative strengths and weaknesses of the TB campaign can be understood and the findings used for decision makers to assess how this intervention was implemented in practice, how it worked in the real world and whether it is worth sustained investment. The RE-AIM framework consists of five dimensions. 1) Reach: assesses the target population, to know who has benefited from the campaign, 2) Effectiveness and Efficacy: reflects how favorably the intervention performed in practice, 3) Adoption: involves the individuals, institutions and target settings that adopt the program, 4) Implementation: shows how the campaign was delivered in the community, and finally 5) Maintenance: talks about the intervention's effects on individual and settings over time.

#### **Data Source:**

We gathered the process documentations through the existing “campaign's report” of each province, the available relevant documents at NTP and through formal and informal meetings and discussions with NTP staff and other relevant stakeholders including Provincial Technical Coordinators (PTCs), Provincial Laboratory Supervisors (PLS) and Management Science for Health (MSH) staff that all were involved in the implementation process of the program. The Afghanistan Demographic Health Survey (DHS) (2015) also served as a source of data collection. Additionally, Afghanistan Central Statistics Organization (CSO) and Health Management and Information System (HMIS) provided information regarding the characteristics of the treatment and comparison among the provinces in regard with their urban and rural population, percentage of poverty, percentage of illiteracy, percentage of people who have heard of TB and the number of health facilities in each province. For the impact evaluation, we used surveillance data, which exists at NTP in form of aggregated

data that includes; the number of TB patients per each quarter of the year, the name of the province and health facility where the data came from and the characteristics of TB patients including; sex, age, site of disease, new and previous treated cases, bacteriological confirmed and clinically confirmed cases. All TB cases were included in this study.

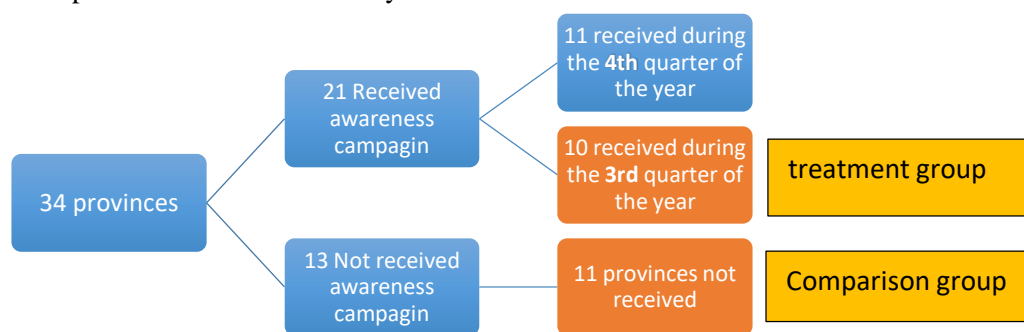
### Statistical analysis:

The expected outcome of this campaign was measured indirectly through comparing the rate of TB cases notified during the 3th and 4th quarter of 2017 with the rate of cases notified during the same quarters of the previous year (2016) in targeted provinces. This comparison is

The provinces that received the campaign during the third quarter were; Kapisa, Parwan, Logar, Pakita, Khost, Badakhshan, Jawzjan, Samangan Takhar and Herat. Those that were excluded from the campaign were: Daikundy, Paktika, Balkh, Faryab, Baghlan, Badghis, Farah, Ghor, Nimroz, Helmand, Urozgan, Nuristan and Zabul. The two last provinces of the comparison provinces were not similar to the treatment provinces, thus we excluded them from the study. The impact of the program was measured through a comparison of the case notification rate (CNR) from the same quarters between 10 provinces that received the intervention and 11 provinces that were excluded from the campaign (Figure 1)

Figure 1. Treatment and comparison provinces included in the study.

due to seasonal pattern of TB in the country.



In doing so, a Difference in Difference (DID) technique was used to compare the change in the outcome in the treatment group with the change in the outcome in the comparison group. The DID calculates the difference in outcome between the treatment and comparison groups before treatment and after the treatment, then the difference between those two differences is the estimated effect of the treatment. Which means that only the net difference between the treatment and comparison groups at end line is attributed to the intervention, not all the change in case reporting from 2016-2017.

The aim was to measure the short-term impact of the intervention, which was expected to be seen

during the campaign in Q3 and the relatively longer-term one which was expected to show up in the quarter after that, Q4. Out of 13 provinces excluded from the campaign 11 of them were included in the comparison group because they were more similar to the treatment group.

An independent sample T-test was run through SPSS to test the similarities of the comparison and treatment provinces in terms of their targeted characteristics. T-test was used also for the outcome variables to measure the impact of the intervention on the treatment provinces descriptively.



**Results:**

The impact evaluation and process indicators results are defined in the following five dimensions of RE-AIM framework.

**Reach:**

The target participants were from those provinces and areas where a low TB case detection rate was reported by surveillance data. In each province, the TB provincial technical coordinator (PTC) in coordination with the provincial public health directorate was responsible to identify the sites. The direct target groups of the campaign were high school's teachers and students, civil society, prisoners, drug addiction management hospitals (patients and doctors), religious leaders, internally displaced communities (IDP), women's safe houses, influential members of the community and public health workers. The target groups consisted of people who were perceived as high risk groups, such as school students, IDPs and drug addicts, that directly receive the message, and those who are in contact with high risk people, such as religious leaders and civil societies, in order to spread the message for them indirectly. Due to the limited budget, it was not possible to gather high-risk groups of people for

the sake of campaign but rather the campaign was implemented in the places where they are already gathered. Therefore, the target groups varied across provinces. The findings show that the number of people who received the message in each province is much smaller than the population of the province, which might be a reason for not witnessing the impact at the provincial level. Overall, the range of people who received the campaign varies between 600 and 2200 in the targeted provinces; whereas the population of these provinces are ranged between 350,000 to one million. Nevertheless, the number of people who were reached might be wider than this, considering those who received the message indirectly. As those who attended the campaign, such as influential community members, teachers and public health workers were told to spread the message in the community. Nevertheless, there was not any follow up assessment to see if they were spreading the message or not.

**Effectiveness / Efficacy:**

Descriptive statistics run by SPSS version 21 indicate the mean of key characteristics of the treatment and comparison groups in Table 1

*Table 1. Descriptive statistics of key characteristics of treatment and comparison provinces*

Variables		N	Mean	Std. Deviation	P-Value
Percentage of rural population 2017	Comparison	11	90.1	11.4	.936
	Treatment	10	90.5	9.5	
Percentage of rural population 2016	Comparison	11	90.2	11.3	.933
	Treatment	10	90.6	9.4	
Percentage of Poverty	Comparison	11	55.7	25.0	.389
	Treatment	10	47.2	18.0	
Health facilities /1000 population - 2016	Comparison	11	0.9	0.3	.013
	Treatment	10	0.7	0.1	
Health facilities /1000 population - 2017	Comparison	11	0.9	0.3	.029
	Treatment	10	0.7	0.1	
Percentage have heard of TB-WOMEN	Comparison	11	75.7	20.2	.203
	Treatment	10	85.2	12.2	
Percentage have heard of TB-MEN	Comparison	11	73.7	24.2	.124
	Treatment	10	87.4	11.9	
Percentage of people with no-education Women	Comparison	11	87.2	9.0	.354
	Treatment	10	83.4	9.2	
Percentage of people with no-education Men	Comparison	11	56.5	14.1	.248
	Treatment	10	49.0	14.5	

The results show an equal mean of both groups in all variables, except for the number of health

facilities in 2016 and 2017. In other words, the treatment provinces and the comparison

provinces were similar regarding most of the covariate variables.

Note: P-value is estimated using independent sample t-test.

Another descriptive analysis was run to measure the mean of outcome variables, the case notification rate for Q3 and Q4 in 2016 and 2017, for the comparison and treatment groups (Table 2).

Table 2. Descriptive table of outcome variables both in treatment and comparison groups

case/comparison		N	Mean	Std. Deviation	P-Value
<b>Case Notification Rate-Q4- 2017</b>	Comparison	11	42.6	12.3	0.236
	Treatment	10	34.8	16.7	
<b>Case Notification Rate-Q4- 2016</b>	Comparison	11	37.0	10.9	0.957
	Treatment	10	37.4	17.9	
<b>Case Notification Rate-Q3-2017</b>	Comparison	11	44.5	13.6	0.504
	Treatment	10	39.7	18.8	
<b>Case Notification Rate-Q3- 2016</b>	Comparison	11	38.0	9.6	0.978
	Treatment	10	37.8	20.2	

Opposite to covariate variables, outcome variables are desired to have different means to indicate the effectiveness of the intervention in the treatment group. The result of this test indicated that the mean of the treatment group is equal to the mean of the comparison group in 2016. This illustrates that both groups had equal CNR before the intervention. However, in 2017, there were also equal means between treatment and comparison groups, which indicates that the intervention was not effective and resulted in no increase in the outcome of the treatment provinces.

Note: P-value is estimated using independent sample t-test.

Difference in difference (DID) analysis was used to estimate the TB awareness campaign's impact in those 10 early conducted provinces. is analysis conducted using SPSS running the following regression.

$Q3 = \text{constant} + B1(\text{treat}) + B2(\text{post}) + B3(\text{treat} * \text{post})$

$Q4 = \text{constant} + B1(\text{treat}) + B2(\text{post}) + B3(\text{treat} * \text{post})$

In this case, the treat\*post is the interaction term for the treatment group in the "post" evaluation period, which is 2017 (Table 3).

3.Table: Difference in difference output of the 3<sup>rd</sup> quarter data

	B	P-Value	95.0% Confidence Interval for B	
			Lower	Upper
(Constant)	38.009	.000	28.306	47.712
Intervention province (treat)	-.189	.978	-14.250	13.872
Year 2017 (Post)	6.518	.342	-7.204	20.240
treat*post	-4.658	.638	-24.543	15.227
Difference in difference output of the 4 <sup>th</sup> quarter data				
	B	P-Value	95.0% Confidence Interval for B	
			Lower	Upper
(Constant)	37.018	.000	28.117	45.919
Intervention province (treat)	.352	.956	-12.547	13.251
Year 2017 (Post)	5.591	.374	-6.997	18.179
treat*post	-8.141	.372	-26.383	10.101

However, the p-value resulted from this regression is not statistically significant for Q3 and Q4 (p-value > 0.05) and the result shows lower CNR in treatment provinces which indicates that the intervention did not have an effect.

The DID results indicate that in Q3 both in treatment and comparison provinces, the case notification rate in 2017 was more than 2016 (38: 44.5 in comparison group; 37.8: 39.7 in treatment group) However, while comparing the difference between treatment and comparison group in the same quarter, the result indicates lower CNR (OR: -4.6) in treatment group compared to comparison one. Likewise, in Q4, among comparison group provinces, the CNR in 2017 was more than 2016 (37: 42.6 in comparison group; 37.4: 34.8 in treatment group). However, in

treatment group, the CNR in 2017 was lower compared to 2016. Therefore, in Q4, there is a larger decrease (OR: -8.1) in final differences between treatment and comparison provinces.

The DID analysis, shows no positive impact of the campaign on the CNR of the quarter during the campaign (Figure 2) nor on the quarter after that (Figure 3). In the Figure 4 and 5, the CNR in Q4, which shows the highest decrease in CNR of treatment provinces, in both treatment and comparison provinces are individually displayed.

Figure 2. The case notification rate during the Q3 in treatment and comparison provinces, DID analysis between 2016 and 2017

Figure 3. The case notification rate during the Q4 in treatment and comparison provinces, DID analysis between 2016 and 2017.

Figure 2. The case notification rate during the Q3 in treatment and comparison provinces, DID analysis between 2016 and 2017

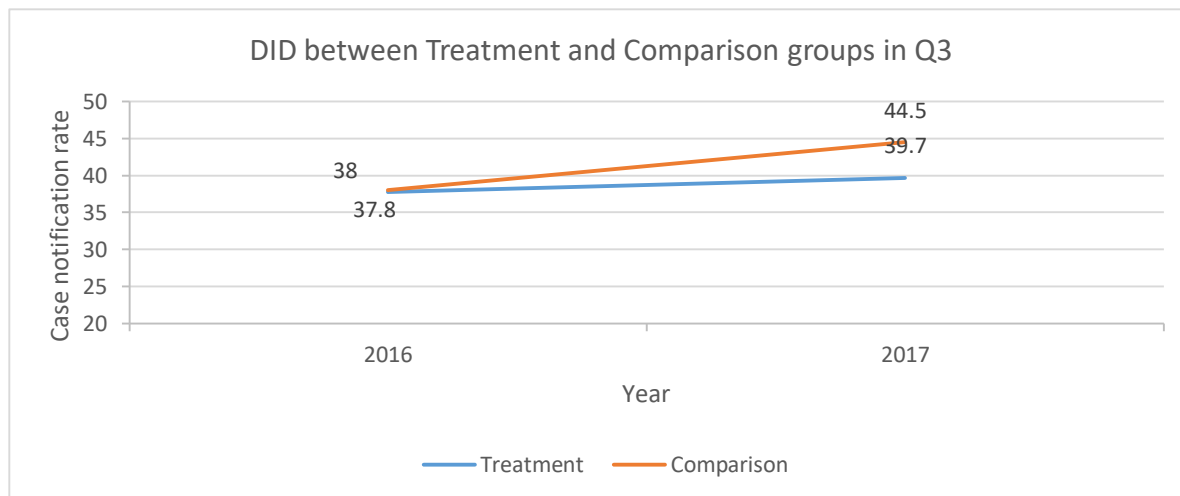
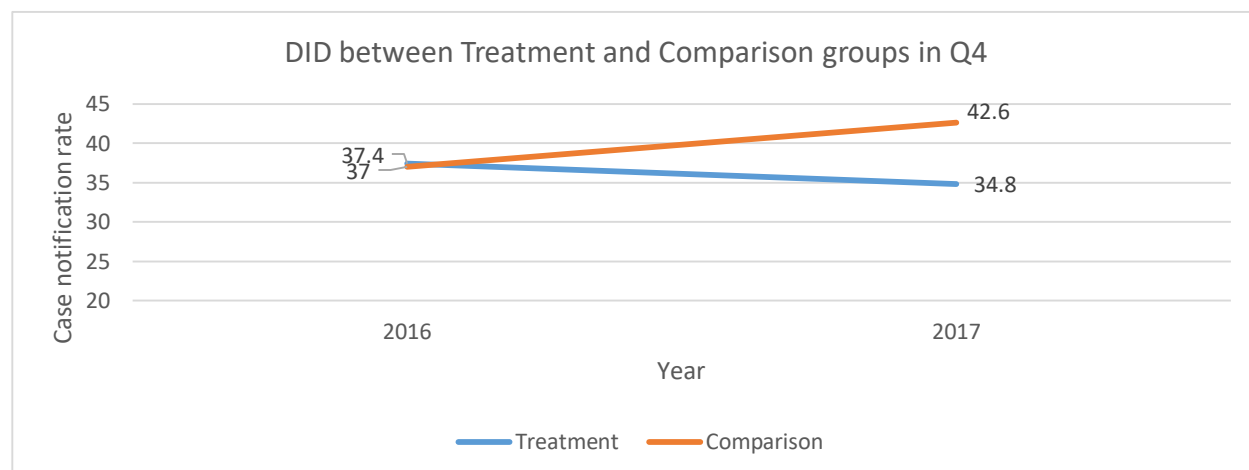


Figure 3. The case notification rate during the Q4 in treatment and comparison provinces, DID analysis between 2016 and 2017.



### Adoption:

The findings of the process evaluation from the NTP staff who were the implementers of the campaigns show that the willingness to participate among the participants in all places were high. All the targeted communities, and almost all the eligible schools that were offered participation, were willing to participate. However, only in a few circumstances the directorate of girl schools were refusing to participate in the campaigns since in Afghanistan, some girl schools are highly conservative and only female students and female staff are eligible to enter the school. Since the NTP staffs are all men, they were not permitted to conduct the campaign in mentioned schools. Unfavorable security conditions were main barrier to implement the program in all the targeted settings. Secure provinces, and secure districts within the provinces, were benefited more than the insecure ones. We do not have detailed information regarding the security situation of the provinces.

### Implementation:

Overall, out of 34 provinces, 21 of them in which the case notification rate was reported low, perceived as secure and easy to access were

targeted for the campaign. NTP staff was traveling into each intervention provinces individually. In each province, the PTC was responsible to decide about area for implementing the campaigns. The inclusion criteria for the areas within the provinces were to be secure for the NTP staff to go and reported low CNR in the surveillance data.

The campaigns were mono component consisting of educational sessions about TB. All the information was in a flipchart presenting by an NTP staff in each session of each province. During the sessions, all the participants received a pen and a notebook to encourage the audience to actively participate in the program.

There was no guideline or procedure plan to help the NTP staff and the PTCs to arrange their activities. Due to the absence of detailed action plan there might be variation in implementation of the program across provinces. These factors might also contribute to the low impact of campaign on CNR in the treatment provinces.

### Maintenance:

The impact assessment resulted for surveillance data indicates that the campaigns had no impact on CNR. Still, in comparison to Q4, the CNR in

Q3 is higher. Meaning that if there would be any impact attributed to the campaign, it would be in the quarter during which the campaign was implemented, rather than in the quarter after that. Moreover, the aim of the TB awareness campaign was to change individuals' behavior and social norms, such as the stigma associated with the TB. Therefore to show better impact, a solid theoretical framework, such as theory of planned behavior and social cognitive theory (Rice & Atkin, 2012) is required to be based on. However, this campaign was not based on any theory which might be a reason for its un-sustainability.

### Conclusion:

The evaluation of the campaigns shows no impact on CNR in 10 early implemented provinces in Afghanistan. There were many shortcomings during the campaign that affected the impact of the campaign on CNR. However, the findings of the process evaluation reveal that other external factors, such as unfavorable security conditions were also involved which adversely influenced the CNR. The overall information regarding the external factors were limited, thus further evaluation studies are suggested to understand the impact of external factors on TB campaigns. The findings of this study will help MOPH/NTP staff to design their future campaigns more efficiently.

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# Phototherapy Effects on Decreasing Bilirubin level in Newborns at Indira Gandhi Institute of Child Health (IGICH)

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## Abstract

**Objective:** Evaluation of CFL (Compact Fluorescent Light) and Conventional phototherapy on bilirubin reduction in neonates with jaundice in Indira Gandhi Institute of Child Health.

**Methodology:** A retrospective and descriptive study of the case series conducted from January to March, 2020. Using “Version 7.2 Epi Info” and multi stage random sampling method, 91 neonates affected by jaundice were selected as to represent the sample. The data are collected by approaching patients’ files and the laboratory investigations and analyzed using SPSS version.

**Results:** Out of 91 patients included in this study, 59% were male and 41% were female. Median gestational age was  $36\pm 2$  weeks, median age was  $3.5\pm 1.6$  days and median weight was  $2400\pm 550$  gram. Bilirubin reduction was 2.6, 2.4, 1.9, 1.9 on first, second, third and fourth day respectively, which is not noticeable. After the treatment 77 patients got cured, 11 needed exchange transfusion, 2 died and 1 was default.

**Conclusion:** Although phototherapy is an accepted treatment method in neonatal jaundice; in our study it did not have a predominant bilirubin reduction in neonates. Causes such as taking the patient away from phototherapy source without need, no changing in position for giving enough phototherapy to the whole body, switching intractably the phototherapy machine off, contributed in the outcome.

**Key words:** Neonatal Jaundice, Neonatal Phototherapy, Exchange Transfusion, Conventional & CFL (Compact Fluorescent Light) Phototherapy, Bilirubin Reduction

# تأثيرات فوتوتراپی در کاهش سويه بيلروبین نزد نوزادان در انستيتوت صحت طفل اندراگاندي

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## خلاصه

**هدف:** ارزیابی تاثیرات فوتوتراپی نوع Compact Fluorescent Light (CFL) و Conventional در کاهش سويه بيلروبین نزد نوزادان انستيتوت صحت طفل اندراگاندي میباشد.

**میتود:** این تحقیق از اول قوس الی اخير دلو سال ۱۳۹۸ در انستيتوت صحت طفل اندراگاندي براه انداخته شد که یک تحقیق توصیفی بشکل تسلسل موردی بوده که با استفاده از نرم افزار اپی انفو ورژن ۷,۲ و روش تصادفی چندین مرحله ۹۱ نوزاد مصاب شده به یرقان انتخاب گردید، ارقام از دوسيه و نتایج معاینات لابراتوری اخذ و با استفاده از نرم افزار SPSS تحلیل و انالیز گردید.

**نتایج:** از جمله ۹۱ مريض ۵۹٪ مذکر و ۴۱٪ مؤنث بود، سن وسطی حملی ۳۶ (±۲) هفته، عمر وسطی نوزاد ۳,۵ (±۱,۶) روز و وزن وسطی نوزاد هنگام تولد ۲۴۰۰ (±۵۵۰) بود، کاهش سويه بيلروبین در روز اول ۲,۶، روز دوم ۲,۴، روز سوم ۱,۹ و روز چهارم ۱,۹ دریافت گردید، که کاهش قابل ملاحظه نمیباشد. بصورت مجموعی به اساس نتایج تداوی از جمله ۹۱ مريض ۷۷ شفایاب، ۱۱ ضرورت به تعویض خون، ۲ واقعه فوتی و ۱ واقعه ترک بستر موجود بود.

**نتیجه گیری:** هرچند فوتوتراپی یکی از روش های قبول شده تداوی یرقان در دوره نوزادی می باشد اما در این تحقیق کاهش چشمگیر در سويه بيلروبین نوزاد به ملاحظه نرسیده که عواملی چون دور نمودن مريض از منبع فوتوتراپی توسط مادر به شکل متکرر و بدون ضرورت، عدم تبدیل وضعیت نوزاد برای تابش شعاع به تمام قسمت های بدن، خاموش نمودن خودسرانه منبع فوتوتراپی توسط مادر جهت کاهش حرارت منبع و عدم تبدیل به موقع گروپ های فوتوتراپی در این امر دخیل می باشد.

**کلمات کلیدی:** فوتوتراپی دوره نوزادی، یرقان دوره نوزاد، تعویض خون، Conventional & Compact Fluorescent Light (CFL) فوتوتراپی، کاهش بيلروبین



## معرفی

یرقان عبارت از تظاهر تغییر رنگ زرد در جلد میباشد که با بلند رفتن سویه بیروبین سیروم اضافه از  $5 \text{ mg/dl}$  در جلد دیده میشود و به دلیل پارچه شدن هیموگلوبین بوجود میاید. در نوزادان تولید و اطراح بیروبین بصورت مختلف میباشد که منجر به بلند رفتن سویه بیروبین به شکل فزیولوژیک نزد نوزادان با معیاد در چند روز اول حیات بعد از ولادت میباشد. یرقان فزیولوژیک نزد نوزاد با معیاد در حدود  $60\%$  و در حدود  $80\%$  نزد نوزادان قبل از وقت قابل مشاهده میباشد تظاهر یرقان در پهلوی اینکه یکی از علایم خطر نزد نوزاد تلقی میشود در ضمن دارای یک سودمندی خاص نیز برای نوزاد میباشد طوریکه یرقان فزیولوژیک یک محافظت کننده در دوران نوزادی در برابر رادیکال های آزاد اوکسیجن میباشد و رادیکال های آزاد اوکسیجن را دفع مینماید زیرا خود بیروبین یکی از انتی اوکسیدانت های فوق العاده قوی میباشد. نزد نوزاد با معیاد یرقان فزیولوژیک طی  $72-30$  ساعت بعد از تولد تظاهر مینماید و شدت اعظمی یرقان طی روز چهارم قابل مشاهده میباشد و بیروبین سیروم زیاتر از  $15 \text{ mg/dl}$  بلند نمی رود و یرقان طی روز ده هم حیات بعد از تولد از بین میرود یرقان فزیولوژیک دارای تظاهرات خاص کلینیکی نمیشد ضمناً ممکن است یرقان فزیولوژیک نزد نوزادان قبل از وقت به شکل مقدمتر تظاهر نماید اما هیچگاه قبل از  $24$  ساعت واقع نمیکرد و سویه بیروبین سیروم خون ممکن است الی  $15 \text{ mg/dl}$  بلند برود، نیاز به فوتوتراپی داشته باشد و حتی باعث تخریب نسج دماغ گردد. عوامل ذیل در تاسیس یرقان فزیولوژیک رول دارد<sup>(۲،۱)</sup>

- تولید بیش از حد بیروبین در نتیجه بلند بودن سویه هیماتوکریت
  - کم بودن عمر کربوات سرخ خون جنینی
  - افزایش تولید بیروبین از منابع غیر هیموگلوبین در نزد نوزادان
  - کاهش یا پایین بودن سویه اخذ کبدی بیروبین بنابر کمبود Ligandin و اخذ های پروتین (Y) در داخل حجرات کبدی
  - کمبود انزایم UDP glucose dehydrogenase در جریان چند روز اول حیات بعد از تولد و بنابراین مواد UDP glucuronic acid برای glucuronidation غیر قابل دسترس میباشد.
  - اخذ بیروبین توسط کبد، مزدوج شدن بیروبین و اطراح بیروبین ضعیف میباشد.
- هنگامیکه عوامل یرقان از جمله علت های فزیولوژیک فوق نباشد بنام یرقان پتالوژیک یاد میشود و نیاز به تحقیقات بیشتر دارد. نظر به تجارب انجام شده نزد نوزادان در حدود  $5\%$  یرقان پتالوژیک انکشاف مینماید

بروز یرقان طی  $24$  ساعت اول حیات بعد از تولد همیشه مرضی یا پتالوژیک میباشد هنگامی که تنه نوزاد بشکل کامل زرد رنگ شود و یا یرقان تا کف دست ها و پاها برسد این نوزاد نیاز به تحقیق و انجام معاینات بیشتر لابراتواری دارد و باید سویه بیروبین آن تعیین شود و عوامل که باعث یرقان پتالوژیک میگردد جستجو و تحقیق شود. هنگامی که یرقان کلینیکی در نتیجه هایپر بیروبینیا غیر مزدوج زیاتر از  $14$  روز دوام مینماید به عوامل احتمالی ذیل فکر شود<sup>(۴،۳)</sup>

- خام بودن یا Immaturity
- امراض هیمولایتیک نوزاد در نتیجه عدم امتزاج گروپ های خونی جنین و مادر
- یرقان ناشی از شیر مادر
- Hypothyroidism
- تضیق پیلور در حالتی که توام با رکودت وظیفوی و اورگانیک امعا باشد
- سندروم Crigler-Najjar
- خونریزی مخفی

یرقان در دوره نوزادی یک واقعه عاجل طبی بوده زیرا هایپر بیروبین غیر مزدوج باعث انسفالوپاتی و یا Kernicterus میشود تظاهرات Kernicterus نوزادی عبارت از بی حال بودن، عدم توانایی شیر خوردن، گریه خفیف، هایپوتونیای که به تعقیب آن هایپرتونیا بوجود آمده، تب، اختلاج، خواب آلودگی، کُما، شخی گردن و غیر نورمال بودن عکسه مورو میباشد. دریافت های فوق در نزد نوزادان قبل از وقت ممکن غیر وصفی باشد. در دوران طفولیت معیوبیت آن بشکل Cerebral palsy ، choreo-athetosis ، نضواری رنگ شدن دندان ها، سوء شکل دندان ها، فلج اطراف علوی، درجات مختلف تاخر رشد و معیوبیت های شنوایی میباشد.<sup>(۵)</sup>

فوتوتراپی به صورت وسیع من حیث یک تداوی مصئون در تداوی هایپر بیروبینیا در دروره نوزادی مورد تأیید قرار گرفته است و توسط تجارب متعدد نشان داده که اشعه که باعث جذب بیروبین میگردد باید حد اعظمی آن ( $425-475 \text{ nm}$ ) باشد و منابع شعاعی که شعاع آنها در حدود فوق باشد توسط میکانیزم های متعدد باعث کاهش سویه بیروبین میگردد طوریکه فوتوتراپی باعث فوتو اوکسیدشن بیروبین گردیده و آنرا منحل در آب میسازد که به این شکل بیروبین از طریق ادرار اطراح میگردد. متأسفانه که نظر واحد درباره اندازه مشخص بیروبین در نزد نوزادان از لحاظ وزن و سن حملی که در آن فوتوتراپی شروع شود وجود ندارد، اما اکادمی اطفال

امریکا پیشنهاد میکند که فوتوتراپی باید وقتی شروع شود که سویه بیلروبین در یک نوزاد صحتمند به  $\text{mg/dl}$  برسد (در نوزادیکه هیمولیز دارد و یا مصاب به سپس یا دارای فکتور پرینتال اسفکسیا دارد در صورتیکه سویه بیلروبین سیروم ۱۵ ملی گرام پردیسی لیتر هم باشد فوتوتراپی شروع شود) هنگامیکه سویه بیلروبین نوزادان به ۲۵ ملی گرام پردیسی لیتر برسد نزد این نوزاد باید عملیه تعویض خون صورت گیرد.<sup>(۶)</sup>

### میتودولوژی

در ابتدا موضوع به کمک استاد رهنما تعیین و سپس بعد از تأیید بورد اخلاقیات وزارت صحت عامه (IRB) تحقیق آغاز گردید، این تحقیق از نوع تشریحی به شیوه تسلسل مودی اجرا گردید. نفوس تحقیق را تمام نوزادان که از اول قوس الی اخیر دلو سال ۱۳۹۶ به لوحه یرقان به این شفاخانه مراجعه و تحت تدای فوتوتراپی قرار گرفتن تشکیل میداد، جهت نمونه گیری در این تحقیق از روش تصادفی چندین مرحله استفاده گردید، که برای دریافت اندازه نمونه از اپی انفو ورژن ۷٫۲ استفاده شده که در آن فاصله اطمینان ۹۵ فیصد، شیوع متوقع ۱۰ فیصد و خطای حاشیوی ۵ فیصد در نظر گرفته شده بود که تعداد نفوس مورد مطالعه در جریان سه ماه حدود ۲۷۰ بوده و سمپل سایز ما ۹۱ نفر تخمین گردید. تمام نوزادان که عمر شان الی هفت روز بوده و به لوحه یرقان نوع غیر مزدوج از اول قوس الی اخیر دلو سال ۱۳۹۶ به انستیتوت صحت طفل اندراگاندی مراجعه و بستر گردیده اند شامل این تحقیق گردید. تمام نوزادان که عمر شان از هفت روز بلند بودند و سویه بیلروبین نوع مزدوج شان نظر به نوع غیر مزدوج بلندتر بود و سویه بیلروبین مجموعی آن به اساس گراف تدای یرقان توسط فوتوتراپی American Academy of pediatric به فوتوتراپی نیاز نداشتند و یا بلند شدن بیشتر سویه بیلروبین که نیاز به تعویض خون بود و یا در اثر کدام اختلاط فوت گردیدند و یا والدین به هر علتی که تعقیب تدای را قبول نکردند از این تحقیق خارج گردیدند. متحولها این تحقیق سن حملی به هفته، سن نوزاد به روز، وزن نوزاد به گرام، سویه بیلروبین مجموعی در زمان آغاز تدای و سویه بیلروبین هر ۲۴ ساعت بعد از آغاز تدای میباشد. ارقام بشکل ارقام ثانوی از فورم ارقام که قبلاً ترتیب گردیده بود جمع آوری گردید. در این تحقیق ارقام توسط نرم افزار SPSS تجزیه و تحلیل شد. در تجزیه و تحلیل ارقام از تست های تی برای مقایسه اوسط استفاده گردید.

### نتایج

این تحقیق که بالای نوزادان مصاب یرقان صورت گرفت در آن از فوتوتراپی نوع CFL و Conventional استفاده گردید در ابتدا ۹۱

مریض نمونه تحقیق را تشکیل میداد. بعد از ۲۴ ساعت نیز ۹۱ مریض موجود بود اما بعد از ۴۸ ساعت یک مریض بهبود یافته و نیاز به دوام فوتوتراپی نداشت و سه مریض دیگر بنا بر بلند بودن سویه بیلروبین به تعویض خون راجع گردید که جمله ۴ نوزاد از تحقیق خارج و ۸۷ مریض تحت تحقیق باقی ماند. بعد از ۷۲ ساعت فوتوتراپی از جمله ۸۷ مریض ۶ مریض به تعویض خون راجع گردید و ۳۴ مریض بهبود یافته و نیاز به دوام فوتوتراپی نداشتند. و در ختم روز چهارم از جمله ۴۸ نوزاد باقیمانده ۳ مریض به تعویض خون راجع گردید، ۲ مریض فوت نمود، ۱ مریض بستر را ترک کرده و متباقی ۴۲ مریض شفایاب گردیدند. که بصورت مجموعی به اساس نتایج تدای از جمله ۹۱ مریض ۷۷ شفایاب، ۱۱ ضرورت به تعویض خون، ۲ واقعه فوتی و ۱ واقعه ترک بستر موجود بود. در این تحقیق ۶۹ مریض تحت فوتوتراپی نوع CFL و ۲۲ مریض تحت فوتوتراپی نوع Conventional قرار گرفتند، به اساس تست تی غیر وابسته کدام تفاوت قابل ملاحظه در موثریت این دو نوع فوتوتراپی موجود نبود. در این تحقیق ۵۴ مریض مذکر و ۳۷ مونث بودند که تناسب آنها ۱۰۰٫۷ میباشد. اوسط سن حملی ۳۶ ( $\pm ۲$ ) هفته (حدود ۳۰ الی ۳۹ هفته)، اوسط عمر نوزاد ۳٫۵ ( $\pm ۱٫۶$ ) روز (حدود ۱ الی ۶ روز)، اوسط وزن نوزاد هنگام تولد ۲۴۰۰ ( $\pm ۵۵۰$ ) گرام (۱۲۶۰ الی ۳۳۰۰ گرام)، اوسط سویه بیلروبین هنگام بستر شدن ۱۷ ( $\pm ۴$ ) ملی گرام فی دیسی لیتر (حدود ۹ الی ۲۹ ملی گرام فی دیسی لیتر)، اوسط سویه بیلروبین بعد از ۲۴ ساعت ۱۴٫۴ ( $\pm ۲٫۲$ ) ملی گرام فی دیسی لیتر (حدود ۹٫۹ الی ۲۷٫۵ ملی گرام فی دیسی لیتر)، اوسط بیلروبین بعد از ۴۸ ساعت ۱۲ ( $\pm ۴٫۵$ ) ملی گرام فی دیسی لیتر (حدود ۴ الی ۲۸ ملی گرام فی دیسی لیتر) و اوسط بیلروبین بعد از ۷۲ ساعت متعاقب فوتوتراپی ۹٫۱ ( $\pm ۲٫۷$ ) ملی گرام فی دیسی لیتر (حدود ۴ الی ۱۵٫۲ ملی گرام فی دیسی لیتر) و در ختم تدای بعد از روز چهارم اوسط بیلروبین ۸٫۲ ( $\pm ۱٫۲$ ) ملی گرام فی دیسی لیتر (حدود ۵٫۹ الی ۱۰ ملی گرام فی دیسی لیتر) بود. که بصورت عموم اوسط کاهش سویه بیلروبین بعد از هر ۲۴ ساعت به ترتیب ذیل میباشد. روز اول ۲٫۶، روز دوم ۲٫۴، روز سوم ۱٫۹ و روز چهارم ۱٫۹ که بیشترین کاهش در ابتدایی فوتوتراپی بود. به اساس تی تست مزدوج که در آن  $CI=۹۵\%$  و  $P < ۰٫۰۵$  تعیین گردیده فرضیه که فوتوتراپی موجه باعث تغییر (کاهش) سویه بیلروبین نزد نوزادان مصاب یرقان میگردد تأیید گردید. به اساس دریافت های لیتراور ها کاهش سویه بیلروبین در حدوداً ۲۴ ساعت اول ۴۷٫۲٪ راپور داده شده بود در حالیکه در این تحقیق ۱۵٫۳٪ دریافت گردید که این کاهش نمایانگر موثریت کمتر فوتوتراپی موجوده در این انستیتوت میباشد.

## مناقشه

تعیین اندازه نمونه ۹۱ مریض به اساس نرم افزار اپی انفو ورژن ۷,۲ صورت گرفت. بصورت نارمل در این انستیتوت از هر دو منبع فوتوترایی CFL (Compact Fluorescent Light) و Conventional استفاده میگردد. از جمله ۹۱ مریض ۱۱ مریض که در آنها فوتوترایی سبب کاهش مطلوب بیلروبین نگردید به تعویض خون راجع گردید که اکثراً بلند بودن بیشتر سویه بیلروبین هنگام مراجعه، مراجعه موخر، دور نمودن مریض از منبع فوتوترایی توسط مادر جهت تغذیه با شیر مادر یا خاموش نمودن خودسرانه منبع فوتوترایی توسط مادر جهت کاهش حرارت منبع و یا عدم تبدیل به موقع گروپ های فوتوترایی، دلایل ممکنه آن میباشد. دو مریض بنابر داشتن انتانات سیستمیک و اختلالات آن فوت گردید و یک مریض به علت نامعلوم ترک بستر نموده بود. در این تحقیق در مورد جنسیت و ارتباط آن سویه بیلروبین تحقیق صورت نگرفت صرفاً ارقام نشان دهنده آن بود که جنس مذکر بیشتر بود. معلومات در مورد سن حملی، وزن نوزاد و عمر نوزاد به اساس معلومات موجوده در کارت ولادت و مصاحبه مستقیم با مریضداران در هنگام بستر شدن دریافت و درج دوسیه گردیده بود. سویه بیلروبین در لابراتوار شفاخانه بصورت یومیه تعیین میگردد و به اساس مقایسه اوسط بیلروبین ابتدایی (زمان بستر شدن) و هر ۲۴ ساعت بعد چنین نتیجه بدست آمد که فوتوترایی در روز های نخست نتایج بهتر دارد. چون قبلاً در مورد نتایج فوتوترایی کدام تحقیق نشر شده در افغانستان موجود نبود، خواستیم دریابیم که ماشین آلات و شیوه موجوده فوتوترایی در این انستیتوت سبب کاهش سویه بیلروبین میگردد یا خیر؟ بناءً بعد از دریافت معلومات و با استفاده از تی تست مزدوج که در آن  $CI = 95\%$  و  $P < 0.05$  تعیین گردید، فرضیه که فوتوترایی مروجه باعث تغییر (کاهش) سویه بیلروبین نزد نوزادان مصاب به یرقان میگردد تایید گردید. به اساس دریافت های لیتراتورها کاهش سویه بیلروبین در حدود ۲۴ ساعت اول  $47.2\%$  راپور داده شده بود در حالیکه در این تحقیق  $15.3\%$  دریافت گردید با استفاده از تی تست تک نمونه ایی که در آن  $CI = 95\%$  تعیین گردیده بود فرضیه که فوتوترایی مروجه باعث کاهش سویه بیلروبین مشابه لیتراتور (معیارات جهانی) نزد نوزادان مصاب به یرقان، رد گردید. این کاهش نمایانگر موثریت کمتر فوتوترایی موجوده در این انستیتوت میباشد که می تواند به دلایل ممکنه مشکلات تکنیکی و آگاهی ناکافی مریضداران باشد.

## نتیجه گیری

در این تحقیق کاهش چشمگیر در سویه بیلروبین نوزاد توسط فوتوترایی به ملاحظه نرسید که عوامل آن چون: دور نمودن مریض از منبع فوتوترایی توسط مادر به شکل متکرر و بدون ضرورت، عدم تبدیل وضعیت

نوزاد برای تابش شعاع به تمام قسمت های بدن، خاموش نمودن خودسرانه منبع فوتوترایی توسط مادر جهت کاهش حرارت منبع و یا عدم تبدیل به موقع گروپ های فوتوترایی در این امر دخیل می باشد، هرچند فوتوترایی یکی از روش های قبول شده تدای یرقان در دوره نوزادی می باشد.

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# Descriptive Epidemiology of Acute Flaccid Paralysis cases in Afghanistan, 2015-2018

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## Abstract

**Background:** Polio is on the verge of eradication, while Afghanistan, Pakistan and Nigeria are the only endemic countries remaining where polio is still prevalent. Surveillance for Acute Flaccid Paralysis (AFP) is one of the four cornerstone strategies of the Polio Eradication Initiative. This study aims to describe the epidemiology of AFP cases in terms of time, place and person.

**Methods:** It is a descriptive study whereby we analyzed the secondary data reported by AFP surveillance in Afghanistan. We accessed and used line-lists from 2015-2018 to describe the epidemiological status of AFP cases in the country. With the use of Epi Info 7 and Microsoft Excel, we calculated descriptive measures including frequencies, mean, median, standard deviation, generated proportions, tables, and graphs.

**Results:** Overall 11513 cases were reported in the last four years (2015-2018) by AFP surveillance, ministry of public health. Majority of the cases (29%) were reported in 2018 while 2088 (18%) cases were reported in 2015. The trend of OPV vaccination has increased from 2015 to 2018 (57%, 64%, 63% and 68%) respectively. Most of the cases were reported from southern and western regions, 57% of which was comprised of male cases. The highest (38%) proportions of cases were less than 30 months' age. Guillain-Barre syndrome (GBS) was 38% of all categories. The samples were collected using appropriate procedures. However, the numbers of confirmed cases were increased from 13 in 2016 to 14 in 2017, 20 in 2018 and 22 in 2019.

**Conclusion:** The AFP surveillance system is a well-established in the country. Nevertheless, with the increase in the trend of OPV coverage there is also increase in number of confirmed polio cases. Hence, the system should be sustained and strategies should be developed to focus on southern region as being the main engine of polio in the country.

**Key Words:** Epidemiology, Acute Flaccid Paralysis, Poliomyelitis, Afghanistan

## چکیده

**پس منظر:** فلج اطفال در آستانه ریشه کن کردن است، در حالی که در افغانستان، پاکستان و نایجریا تنها کشورهای اندیمیک در حال گسترش است. سرویلانس برای فلج شل حاد یکی از چهار استراتژی اساسی طرح ریشه کن کردن فلج اطفال است. این مطالعه با هدف توصیف اپیدمیولوژی موارد فلج شل حاد از نظر زمان، مکان و شخص انجام شده است.

**روش تحقیق:** این یک مطالعه توصیفی است که بر اساس تحلیل مجموعه داده های گزارش شده از طریق سرویلانس فلج شل حاد در افغانستان است. ما برای توصیف وضعیت اپیدمیولوژیک فلج شل حاد از جدول ارقام وقایع ۲۰۱۸-۲۰۱۵ در کشور استفاده کردیم. با استفاده از برنامه های Microsoft Excel و Epi Info 7 اقدامات توصیفی از جمله فریکونسی، میانگین، انحراف معیار، نسبت ها، جداول و نمودارها را محاسبه و ترسیم نمودیم.

**نتایج:** به طور کلی ۱۱۵۱۳ موارد در چهار سال گذشته از ۲۰۱۸-۲۰۱۵ به سرویلانس فلج شل حاد وزارت صحت عامه گزارش شده است. بیشترین موارد (۲۹٪) در سال ۲۰۱۸ و (۱۸٪) موارد در سال ۲۰۱۵ گزارش شده است. روند واکسیناسیون قطره دهانی فلج اطفال از سال ۲۰۱۸-۲۰۱۵ (به ترتیب ۵۷٪، ۶۴٪، ۶۳٪ و ۶۸٪) افزایش یافته است. بیشتر موارد از مناطق جنوبی و غربی گزارش شده است و ۵۷٪ از این افراد طبقه ذکور بودند. بیشترین فیصدی (۳۸٪) موارد گروه سنی کمتر از ۳۰ ماه بودند. ۳۸٪ سندرم گیلن-باره (GBS) سبب مرض بوده است. روش جمع آوری نمونه و وضعیت مدفوع خوب بود. با این وجود تعداد موارد تأیید شده از ۱۳ مورد در سال ۲۰۱۶ به ۱۴ مورد در سال ۲۰۱۷، ۲۰ مورد در سال ۲۰۱۸ و ۲۲ مورد در سال ۲۰۱۹ افزایش یافته است.

**نتیجه گیری و سفارشات:** سیستم سرویلانس برای فلج شل حاد در کشور کاملاً تثبیت شده است. روند پوشش OPV در حال افزایش است در حالی که موارد فلج اطفال تأیید شده نیز در حال افزایش است. این سیستم باید پایدار باشد و استراتژی ها باید به منطقه جنوبی به عنوان ابزار اصلی فلج اطفال در کشور متمرکز شوند.

**کلمات کلیدی:** اپیدمیولوژی، فلج شل حاد، پولیومیلیت، افغانستان

## Introduction:

**A**cute flaccid paralysis (AFP) or floppy weakness i.e. paralysis in a child aged less than 15 years of age, can happen due to any cause including Guillian-Barre syndrome (GBS); or any Paralytic illness in a person of any age when polio is suspected by the clinician. The diagnoses of the acute flaccid paralysis include paralytic poliomyelitis, Guillian-Barre syndrome and Transverse myelitis. Less common etiologies are traumatic neuritis, encephalitis, meningitis and tumors. All should be reported to the AFP surveillance system. Distinguishing characteristics of paralytic polio are asymmetric flaccid paralysis, fever at onset, rapid progression of paralysis, residual paralysis after 60 days, and preservation of sensory nerve function. However, clinical features alone are not enough to clearly distinguish poliomyelitis from other causes of AFP. For this reason, it is important to obtain stool

specimens for Virological testing from all the cases regardless of the clinical picture <sup>(1)</sup>. AFP is a complex clinical syndrome with a broad range of potential etiologies and it is a heterogeneous group. The medical conditions are lesions of the anterior horn cell including poliomyelitis, the spinal cord (as in transverse myelitis), the peripheral nerve (as in Guillain-Barre syndrome) and toxic neuropathies from various infections including diphtheria, the neuromuscular junction (as in botulism) and muscle disorders, such as metabolic myopathies including hypokalemia and myositis <sup>(2)</sup>.

All reported AFP cases need to be classified within the 90 days of paralysis onset. Adequate, inadequate collections of stool specimen, completion of 60-days follow up for all AFP cases. Cases that have positive laboratory results for wild polio viruses are labeled as “Confirmed”

whereas, cases with adequate stool specimen having negative laboratory result are discarded irrespective of 60-days follow up result. The cases for which adequate stool specimen could not be collected and have residual paralysis at 60-days follow up, would be presented to Expert Review Committee(ERC). The ERC would then review these cases, if the clinical pictures of mentioned cases resemble acute paralytic polio, then this is classified as compatible polio, otherwise the case would be discarded. The differential diagnosis of AFP varies geographically from region to region. Polio is a highly infectious disease and a paralytic illness with a permanent disability, varying in severity from asymptomatic to severe, primarily affecting children below 5 years' old which is caused by polioviruses. Only less than one percent of the children infected with polio virus become paralyzed, and for every paralyzed child there are approximately 200 children infected and asymptomatic around <sup>(3)</sup>.

Polio has been considered a candidate for eradication. The global Polio Eradication Initiative (GPEI), the most astronomical immense public health program ever in the history of disease eradication, aimed to eradicate the disease by 2000 and ever since revised the target for global certification by 2018 <sup>(4)</sup>.

The introduction of the Salk inactivated polio vaccine (IPV) in 1995 led to an immediate and dramatic reduction in both epidemic and endemic polio <sup>(5)</sup>. Polio has been eradicated in many parts of the world by IPV and trivalent OPV (oral polio vaccine). Polio has been controlled worldwide whereas, it is still a threat to few areas of sub-Saharan Africa, Indian subcontinent and areas with low socioeconomic status and being affected by war <sup>(6)</sup>. With the global polio eradication initiative by the WHO in 1988, the surveillance for AFP is an important public health activity in many countries. With the WHO's impressive progress, poliomyelitis is near to be eradicated in the world and other causes of AFP have gained importance. WHO adopted several strategies such as routine

childhood immunization, supplementary immunization, intensified surveillance and rapid response to identified outbreaks to control and ultimately eradicate polio from most regions of the world.

### **Polio Eradication in Afghanistan Surveillance:**

A sustainable AFP Surveillance system was established in 1997 to find and document the presence of wild poliovirus in Afghanistan. This is the only reliable way to monitor how effectively routine and supplementary OPV immunization decrease and ultimately interrupt poliovirus transmission. AFP Surveillance data is also guiding targeted additional immunization activities in remaining areas of wild polio virus circulation, leading towards polio eradication, with the successful completion of polio eradication, the country will prospect receiving a polio free certification.

### **Vaccination campaigns:**

The supplementary immunizations activities (SIAs) are intended to complement and not to replace the routine immunization. The aim of mass campaigns is to immediately interrupt circulation of poliovirus by immunizing every child under 5 years of age with two drops of OPV regardless of previous immunization status at regular intervals <sup>(1)</sup>.

### **Rationale:**

Polio is counted among those limited number of diseases that can be eradicated. Other diseases can be controlled through immunization, but never eradicated. AFP surveillance is one of the four cornerstone strategies of the Polio Eradication Initiative. The Polio eradication strategy emphasizes AFP surveillance rather than surveillance for polio. AFP surveillance data are the final measure of a country's progress toward polio Eradication and is also the main source for virus isolates. Afghanistan is one of only three countries in the world where polio remains endemic, together with Pakistan and Nigeria. But there is a

growing sense of optimism that polio will be the second disease, after smallpox, to ever be eradicated <sup>(8)</sup>. High quality AFP surveillance is essential to rapidly detect and respond to on-going polio transmission <sup>(1)</sup>. This study aims to describe the epidemiology of AFP cases in terms of time, place and person.

### Objectives:

To describes AFP cases in terms of time, place and person and provide recommendation for improving the quality of reporting system.

### Material and Methods:

#### Study design & Study area:

For this study, we conducted a descriptive study utilizing secondary data and reported to the WHO Afghanistan Country Office surveillance database, the data was collected through national surveillance department of AFP surveillance covered from 2015 to 2018.

#### Study population:

All children below 15 years old with sudden onset of weakness or floppiness in one or more limbs and any adult above 15 years old that a clinician suspects polio.

#### Data collection and analysis:

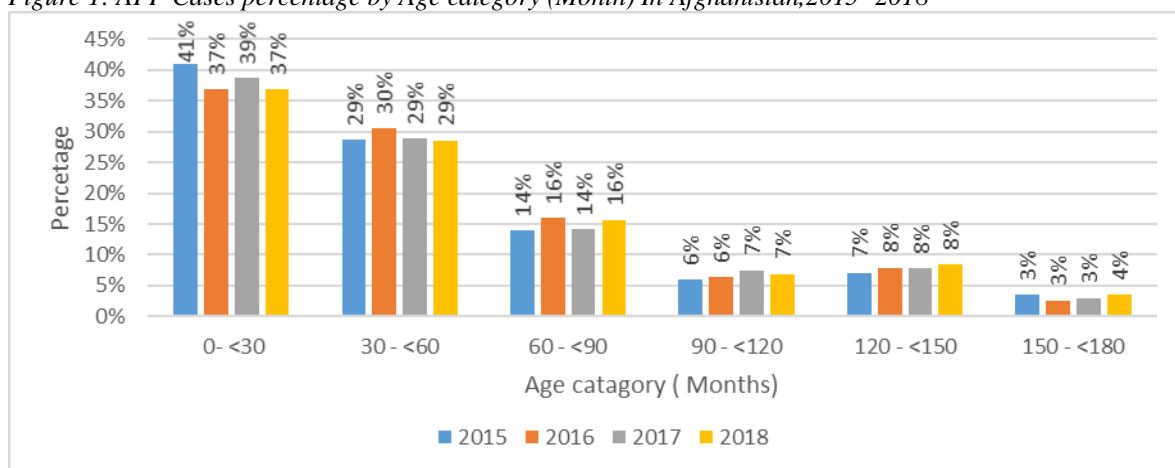
We accessed the dataset for AFP surveillance which was reported via AFP surveillance in Expanded Program of Immunization (EPI). Our

analysis was restricted to dataset in 2015-2018. We Analyzed the data using Epi Info version 7 (Centers for Disease Control and Prevention, United States) and Excel, where all descriptive analysis frequencies, tables, and graphs were generated.

### Results:

Overall, 11513 cases were reported over the four years (2015-2018) by AFP surveillance, Ministry of Public Health. Majority of the cases 3388 (29%) were reported in 2018 while 2088 (18%) were reported in 2015. The trend of OPV vaccination has increased from 2015 to 2018 (57%, 64%, 63% and 68%) respectively. Most of the cases were reported from southern and western regions where 57% of cases were males. The highest (38%) proportions of these cases were less 30 months' age. Guillain–Barre syndrome (GBS) was 38% of all categories. The samples were collected using appropriate procedures. However, some increments in number of the confirmed cases were seen from 13 in 2016 to 14 in 2017, 20 in 2018 and 22 in 2019. The adequate stool condition was good (93.5%) in four years.

Figure 1: AFP Cases percentage by Age category (Month) In Afghanistan, 2015- 2018

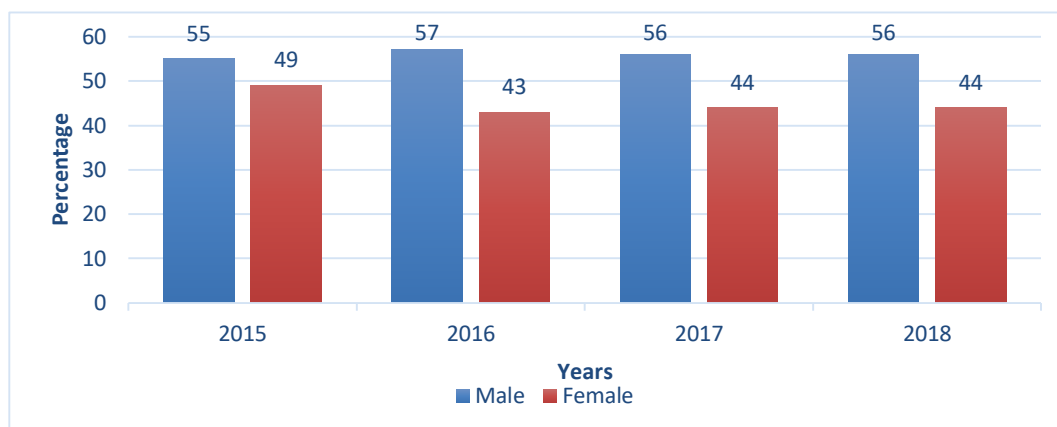




The AFP cases were reported mostly (39%) among the children under the 30 months in four

years and the least number (3%) in 150-180 age group.

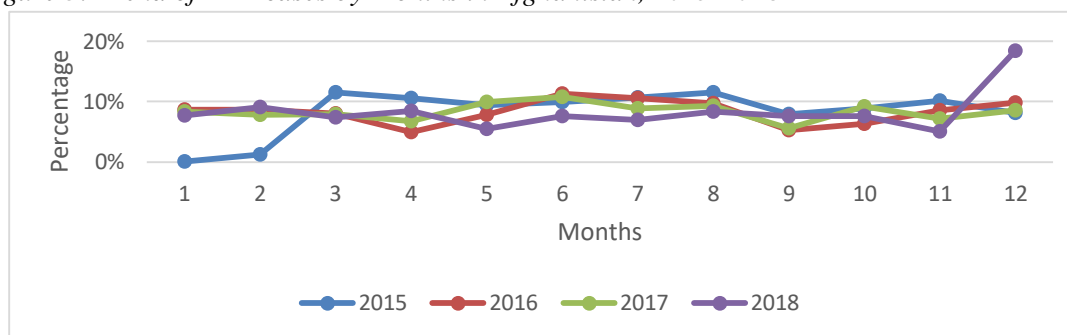
Figure 2: Percentage of AFP Cases by Sex in Afghanistan, 2015-, 2018



Among major cases of AFP, 56% were male

whereas 34% were reportedly female cases.

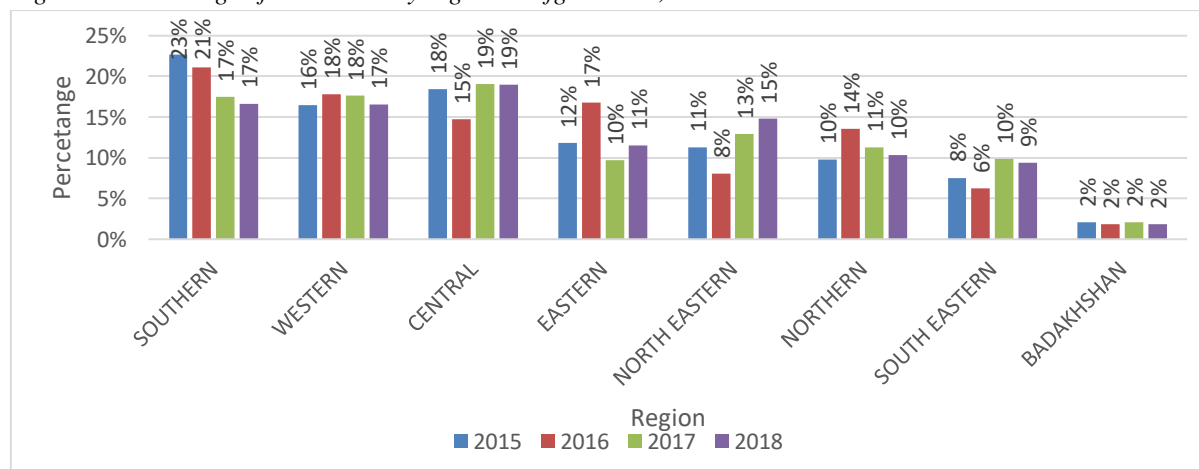
Figure 3: Trend of AFP cases by Months in Afghanistan, 2015-2018



In 2015 most of the cases were reported in March and August months, while in 2018 majority of the cases were reported in November and

December. Additionally, in 2016-2017 the cases had normal rang.

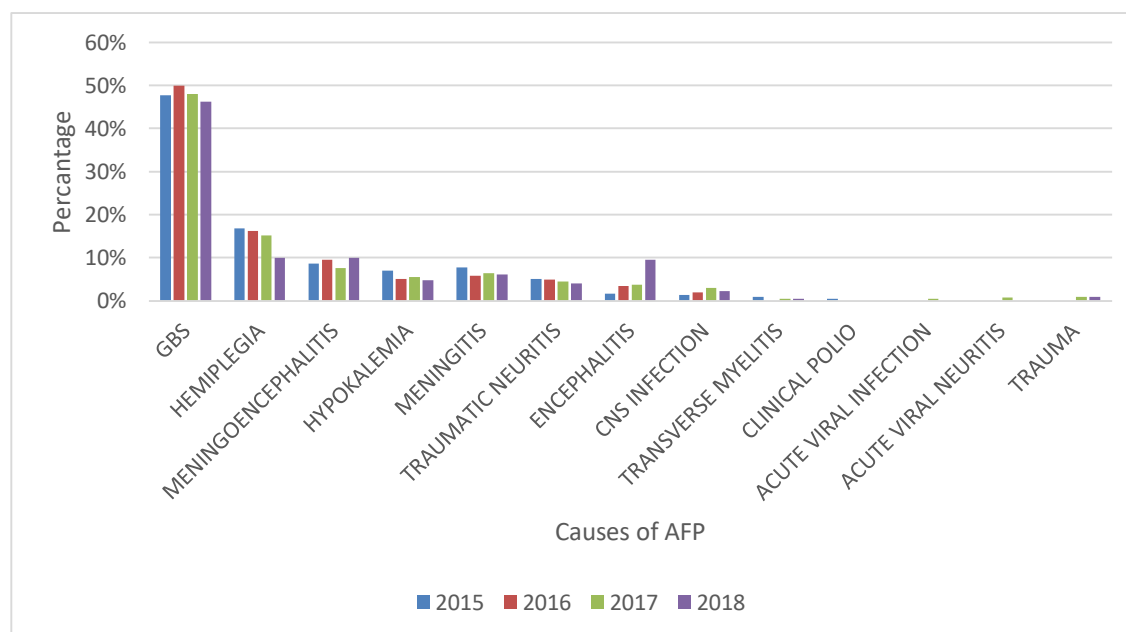
Figure 4: Percentage of AFP cases by region in Afghanistan, 2015-2018



In 2015-2016 a high number of cases were reported in Southern region, in 2017 they were reported in Central and Western regions and in 2018 majority of the cases were reported from Central, Western and Southern regions. A minimal number of cases were reported in 2015 to 2018 in Badakhshan region. All the 34 province

reported AFP cases in aforementioned four years; the majority of them were from Nangarhar (8%, 10%, 7%, 8%), Kandahar (9%, 10%, 7%, 7%), Kabul (8%, 6%, 9%, 9%), Helmand (8%, 5%, 6%, 6%) and Herat (9%, 9%, 9%, 8%) while Panjshir (1%, 0%, 1%, 0%) and Nuristan (0%, 1%, 1%, 1%) were with minimum cases.

Figure 5: Frequency distribution of Acute Flaccid Paralysis in Afghanistan, 2015-2018



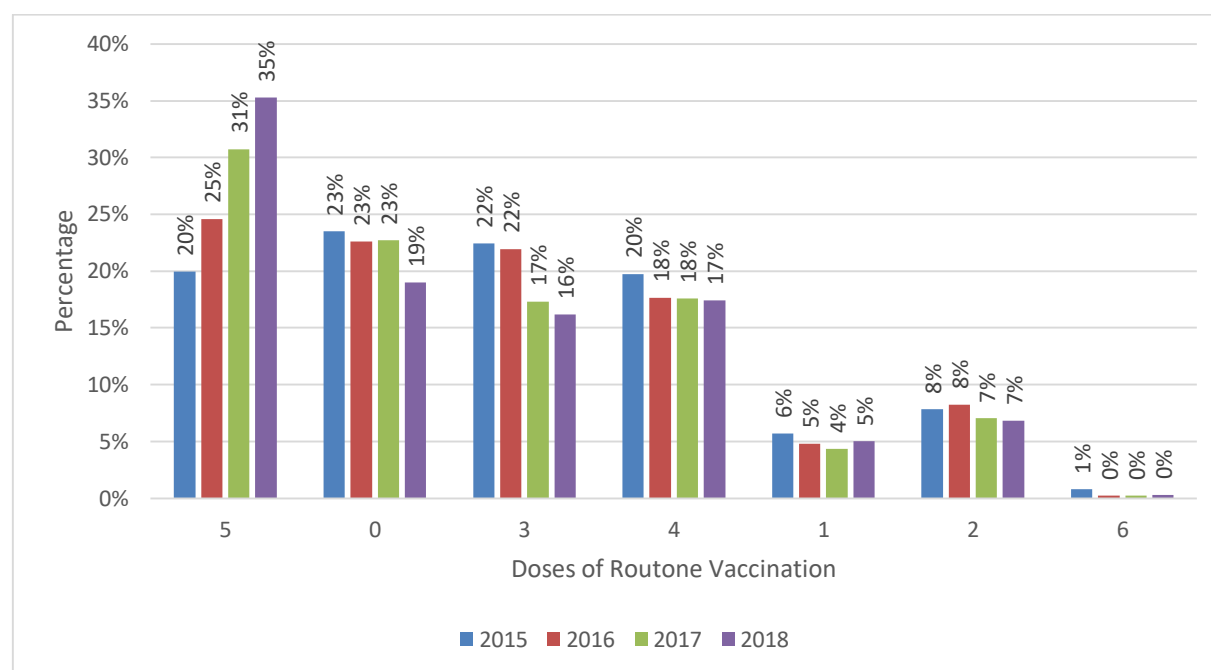
Guillian–Barré syndrome (GBS) was found out to be the common cause with a lot of patients (48%, 50%, 48%, 46%) in four years. Hemiplegia came out to be the second common cause (17%, 16%, 15%, 10%) in four years

Table 1: Percentage AFP cases received vaccination in Afghanistan, 2015-2018

Vaccination state	2015	2016	2017	2018
+11 DOSES	57%	64%	63%	68%
1-3 DOSES	4%	4%	4%	3%
4-6 DOSES	10%	6%	7%	5%
7-10 DOSE	28%	25%	25%	22%
Unvaccinated	1%	2%	1%	1%

The percentage of OPV vaccination has increased from 2015 to 2018 (57%, 64%, 63% and 68%) in four years respectively.

Figure 6: Percentage AFP cases received routine vaccination in Afghanistan, 2015-2018



The majority of the cases 35% in 2018 and 20% in 2015 received 5 doses of vaccination, while 23% in 2015 and 19% in 2018 received no doses of vaccination. Overall, among all the cases, 54% in 2015 and 43% in 2018 have received SIs vaccination, most of these cases received 0-10 doses of SIAs vaccination.

Fever was counted as the first common symptoms with the majority of AFP cases in Afghanistan. And the second common symptom after fever was Flaccid among the AFP cases.

From 2015 to 2018 the majority of the cases 88% were detected in 0-7 days, while 4% of them were detected in over 13 days. In four year, the average adequacy stool condition was 93.5%.

### Conclusion:

This study describes the results of a four-year surveillance of AFP in Afghanistan, we carried out this study to describe the AFP surveillance system in Afghanistan in terms of person, place and time, and provide recommendations for improvement.

With poliomyelitis nearing its elimination in the world, the other causes of AFP in children and

adults have become significant. Various data analysis of AFP cases over the last two decades have consistently reported GBS as the most common cause of non-polio AFP all over the world,(9,10) with a frequency ranging from 20% in Oman(11) to 72.2% in Central America.(12) The AFP surveillance is a well-established data collection system in the country. Nevertheless, with the increase in the trend of OPV coverage there is also increase in number of confirmed polio cases. Hence, the system should be sustained and strategies should be developed to focus on southern region as being the main engine of polio in the country.

Accurate surveillance for poliomyelitis is essential for the eradication; therefore, the focus should be on of collected data and supervision of surveillance workers.

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# بررسی سببی و دموگرافیکی بیماران مننژیت بستری در شفاخانه صحت طفل ایندراگاندی کابل طی سال ۱۳۹۷

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## خلاصه

**پس منظر:** مریضی مننژیت یکی از عاجل ترین واقعات است که نیاز به اقدامات تشخیصی و درمانی سریع و صحیح دارد. حدود ۷۰٪ واقعات مننژیت نزد اطفال زیر ۵ سال و کاهلان بیشتر از ۶۰ سال رخ میدهد. هدف از این مطالعه بررسی دموگرافیک و سببی مریضان مننژیت بستری شده در شفاخانه صحت طفل ایندراگاندی در سال ۱۳۹۷ می باشد.

**روش بررسی:** این مطالعه از نوع مقطعی توصیفی بوده و بر روی دوسیه مریضان بستری شده با تشخیص مننژیت در طی سال ۱۳۹۷ در شفاخانه صحت طفل ایندراگاندی شهر کابل صورت گرفته است. ارقام با دقت کامل جمع آوری گردیده و توسط آمار توصیفی در نرم افزار SPSS16 تجزیه و تحلیل گردید.

**یافته ها:** از مجموع ۲۰۳۸۸۷ مریضان که در بخش های مختلف شفاخانه مذکور راجستر شده بود، ۵۴۶ مریض با تشخیص احتمالی و یا قطعی مننژیت بستر شدند. از این جمله ۵۸٪ مریضان مذکر و ۴۲٪ مؤنث می باشد و بیشترین سن ابتلا ۱-۰ سال بوده است که تب شایعترین (۸۳،۵٪) دریافت کلینیکی آن ها بود. نزد ۶۷،۳٪ مریضان Lumbar Puncture انجام شد که منتج به تشخیص مننژیت باکتریایی حاد (۲۵،۱٪)، مننژیت توپر کلوزیک (۸،۴٪)، ترکیبی از هر دو (۱۰،۳٪)، مننگوانسفالیت (۳،۴٪) و احتمال عفونت سیستم عصبی مرکزی (۵۲،۷٪) گردیده بود. اکثریت مریضان (۶۷،۳٪) کمتر از ۷ روز بستری شدند و ۱۲،۸ درصد مریضان در بستر فوت نمودند.

**نتیجه گیری:** شیوع این مریضی ۰،۲۶ درصد مریضان راجستر شده در این مرکز بوده است و در پسران حدود ۱،۴ برابر دختران می باشد. فصول خشک سال بیشترین وقوع را داشت و همچنین وقوع این مریضی با سن رابطه عکس داشته است. تب شایعترین یافته کلینیکی آنها بوده است. با در نظر داشت این که معاینات متمم کافی نمی باشد اکثریت مریضان به لوحه مشکوک به عفونت سیستم عصبی مرکزی تشخیص و درمان شده بودند و حدود ۱ مریضان در بستر فوت نمودند، بناءً تشخیص نامناسب و مدیریت غیر استاندارد بنابر افزایش اختلالات طویل المدت و مرگ اطفال در نهایت این مریضی را به یک بار اقتصادی و اجتماعی بر دوش جامعه تبدیل نموده است. بنابراین ضرور است تا وسایل تشخیصیه اختصاصی در شفاخانه مهیا گردیده و معاینات لابراتواری اختصاصی برای تشخیص سبب میکروبی برای مریضان مشکوک به مننژیت انجام گردد.

**کلمات کلیدی:** التهاب سحایا، مننژیت باکتریایی، مننژیت توپر کلوزیک، عفونت سیستم عصبی مرکزی، مایع دماغی-نخاعی، افغانستان

## **Abstract**

**Background:** Meningitis is a serious public health problem that demands timely diagnosis, effective treatment, prevention, and control. Approximately 70 percent of meningitis cases occur in children under the age of 5 and in adults over the age of 60. This study is aimed to determine the Demographic and causative features of hospitalized meningitis patients in Indira Gandhi children Hospital during the year 1397.

**Methodology:** The methodology involved reviewing the records of the admitted children to Indira Gandhi children Hospital during year 1397. The data were carefully encoded and analyzed using descriptive statistics. SPSS version 16 was used for analysis.

**Results:** A total number of 203887 patients were registered during year 1397 in different wards, out of which 546 patients were hospitalized with confirmed or suspected meningitis, 58% of these cases were male and 42% were Female with age range of 0-12 months. The most percentage about 83.5% of patients were presented with fever. LP was done for 67.3% of patients. The final diagnosis based on the LP analysis, was as follow: Acute Bacterial Meningitis 25.1%, Tuberculous Meningitis 8.4%, Acute Bacterial Meningitis + Tuberculous Meningitis 10.3%, Meningoencephalitis 3.4% and Possibility of CNS infection 52.7%; majority of patients (67.3%) hospitalized for less than 7 days and 12.8% of patients expired on bed.

**Conclusion:** the incidence of meningitis was 0.267 % of the registered patients. Male: female ratio was 1.4: 1. The majority of patients were hospitalized in dry seasons of the year and also it had an inverse relationship with age. Fever was the most common clinical finding. Because of insufficient diagnostic, most of them were diagnosed and treated as having Central Nervous system (CNS) infection. One out of six patients expired in the hospital. Furthermore, inappropriate diagnosis, sub-standard management and improper treatment may lead the disease to be an economic and social burden on the society by increasing long term complications and death rate in children, Therefore, it is recommended that sufficient equipment for diagnosing meningitis should be made available in the hospital and advanced diagnostic tests should be conducted for suspected patients.

**Keywords:** Bacterial meningitis; Tuberculosis meningitis; central nervous system infection; cerebrospinal fluid, Afghanistan

## زمینه و هدف:

مریضی مننژیت یک مریضی عفونی ناشی از عوامل باکتریال یا وایرال است که به دلیل پاسخ التهابی پتو مننژ ایجاد می‌شود و با وجود تعداد غیر طبیعی WBC در مایع CSF مشخص می‌شود<sup>(۱)</sup>. از لحاظ کلینیکی به صورت شروع علائم تحریک مننژ در عرض چند ساعت تا چند روز تعریف می‌شود. سردرد از جمله علائم بارز مریضی است، ولی بیشتر مریضان قبل از شروع تظاهرات سیستمیک بدون علامت هستند و یا فقط تب دارند. علائم اولیه مرض شامل: سردرد، سوزش گلو، آبریزش بینی، سرفه، کانژنکتیویت است. با شروع فاز شدید مریضی علائمی نظیر: تهوع و استفراغ، تب و لرز، درد عضلی و مفصلی نیز اضافه می‌گردد. تب معمولاً شدید و بین ۳۹ تا ۴۱ درجه سانتیگراد است<sup>(۱،۲)</sup>

علل مننژیت حاد بسیار متنوع است، از جمله علل عفونی شامل باکتریها، ویروسها، ریکتزها، اسپیروکتها و پروتوزواها و از علل غیر عفونی برخی داروها، تومورها و کتله های داخل جمجمه ای و مریضیهایی سیستمیک مانند (SLE) Systemic Lupus Erythematosus، برخی اعمال جراحی روی سیستم عصبی و مواردی مانند تشنج، مننژیت مولارت است<sup>(۱)</sup>. علل وایرال مننژیت بسیار زیاد است. آنروویروس حدود ۸۵-٪ ۹۵ علل ویروسی مننژیت را به خود اختصاص می‌دهد. سایر علل آروویروسها، ویروس Mumps و ویروس LCM (لنفوسیتیک کوریو مننژیت) است<sup>(۱)</sup>. از علل باکتریال عمده ترین پاتوژنها شامل هموفیلوس آنفلوانزا، نیسریا مننژیتیدیس و استرپتوکوک پنومونیه می‌باشد که علل بیش از ۸۰٪ را به خود اختصاص داده است<sup>(۱)</sup>

از آنجائیکه زمان ابتلا به مریضی اغلب در دوران کودکی است، نه تنها عوارض مریضی و معلولیت های ناشی از آن افراد مبتلا را سالیان متمادی درگیر می‌نماید، بلکه عواقب اقتصادی و اجتماعی نامطلوب آن جامعه را نیز متأثر می‌سازد. به علاوه از خصوصیات قابل توجه مننژیت، قابلیت ایجاد اپیدمی توسط سوش خاصی از ارگانیسم مولد مریضی است که کنترل آن تنها با بنا نهادن یک نظام مراقبت پویا و دقیق و گزارش دهی به هنگام و سریع امکان پذیر می‌گردد. در حال حاضر توجه سازمان جهانی بهداشت به مراقبت از مریضی مننژیت در کودکان زیر پنج سال معطوف شده است و طبعاً عفونت با ارگانیسم هموفیلوس آنفلوانزا که بیشترین درصد ابتلا این کودکان را در کشورهای در حال توسعه، تشکیل می‌دهد دارای اهمیت زیادی است<sup>(۱،۳،۴)</sup>

در کشورهایی که طی سالهای گذشته در قالب طرح واکسیناسیون ملی، اقدام به واکسیناسیون بر علیه ارگانیسم هموفیلوس آنفلوانزا در کودکان نموده‌اند، شیوع مننژیت به شدت کاهش یافته و از انسیدانس ۰٫۶۱ مورد در ۱۰۰۰۰۰ نفر در طی ۱۹۹۸-۱۹۹۹ به ۰٫۰۵ مورد در ۱۰۰۰۰۰

نفر در طی ۲۰۰۷-۲۰۰۶ رسیده است. بطوریکه امروزه مننژیت باکتریال از علل مننژیت در بالغین است تا شیرخواران و نوزادان<sup>(۱،۵)</sup>

میزان مرگ و میر در مننژیت وایرال بسیار کم است و بهبودی کامل معمولاً ایجاد می‌شود. در مننژیت باکتریال مرگ و میر بسته به نوع میکروب بین ۲۵-٪۱۰ متفاوت بوده است. ریسک فاکتورهای مرگ و میر در میان مریضان مبتلا به مننژیت اکتسابی در جامعه سن بالای ۶۰ سال، اختلال هوشیاری در بدو پذیرش به شفاخانه، تشنج در ۲۴ ساعت اول مریضی است. عامل باکتریال شایع بسته به سن، مریضی های زمینه ای و دستکاری روی سیستم عصبی متفاوت است. شایعترین پاتوژنهای دوره نوزادان باسیل گرم منفی و استرپ گروه B و لیستریا مننژیتیدیس است. در بالغین علل اصلی مننژیت است<sup>(۱-۷)</sup>

تشخیص مریضی بر اساس آزمایش cerebrospinal fluid است که با Lumbar Puncture کردن مریض به دست می‌آید. کشت خون نیز در مریضان با مننژیت باکتریال لازم است<sup>(۱،۲)</sup>

مننژیت توپر کولریک سبب وفیات و عوارض زیادی می‌گردد، خصوصاً نزد اطفال و آنهایی که همزمان آلوده به ایدز میباشند، نتیجه خوب ندارد. در این گروه ها به میان آمدن مننژیت می‌تواند کاملاً ناگهانی باشد و به زودی شخص را به طرف کومای شدید و متعاقباً مرگ ببرد؛ علاوه بر این خطر داشتن توپرکلوز فعال در سایر اعضا در این اشخاص زیاد است<sup>(۸-۱۱)</sup>

با توجه به مطالب فوق مریضی مننژیت حاد یکی از واقعات عاجل طبابت است که نیاز به اقدامات تشخیصی و درمانی سریع و صحیح دارد که در غیر این صورت با مرگ و میر و عوارض بالایی همراه است. از طرفی اطلاع از خصوصیات دموگرافیک و کلینیکی مریضی در یک منطقه جغرافیایی و اطلاع از سوشهای مریضی زای هر منطقه کمک زیادی به انجام صحیح تر و دقیق تر اقدامات اولیه درمانی خواهد شد. لذا این مطالعه با هدف کسب اطلاعاتی در مورد ویژگی های دموگرافیک و کلینیکی علل مننژیت در شفاخانه صحت طفل اندراگاندی شهر کابل طراحی و اجرا گردید.

## روش بررسی:

این مطالعه به صورت مقطعی توصیفی انجام شده است. نفوس مورد مطالعه شامل کل مریضان (۱۴- سال) بستری به لوحه مننژیت در شفاخانه صحت طفل اندراگاندی شهر کابل در طی سال ۱۳۹۷ می‌باشد. روش نمونه گیری در این بررسی به روش (عمومی) سرشماری و روش گردآوری داده ها مراجعه به دوسیه و ابزار جمع آوری فرم مخصوص بود. اطلاعات مورد نیاز بر اساس اسناد و مدارک موجود در شفاخانه و همچنین

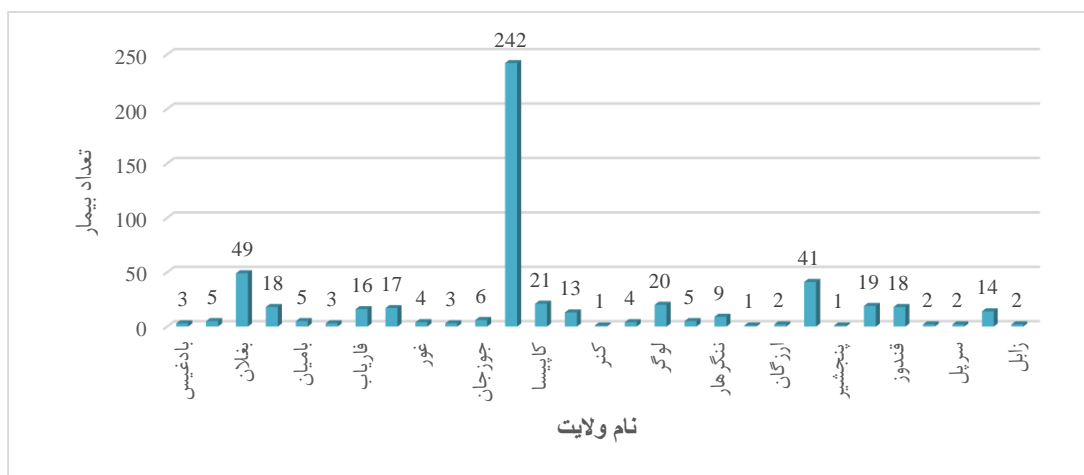
با استفاده از فرم‌های مخصوص جهت مریضان مننژیت تکمیل گردید. داده‌های گردآوری شده با استفاده از نرم افزار آماری SPSS و آمار توصیفی تجزیه و تحلیل گردید.

#### یافته‌ها:

در این مطالعه ۵۴۶ مریض در طی سال ۱۳۹۷ به لوحه مننژیت بستری

شده‌اند که مبین میزان بروز ۲۶۷ در صد هزار نفر مریض مراجعه کننده به شفاخانه مذکور می‌باشد. از این تعداد ۳۱۶ نفر مذکر (۵۷٫۸) و ۲۳۰ نفر مونث (۴۲٫۱) بوده اند. بیشترین سن ابتلا ۱-۱۰ سال بوده است با ۱۳۳ مورد (۲۴٫۴٪) و بیشترین موارد ابتلا مربوط به فصل بهار، ۱۸۴ مورد (۳۳٫۶٪) و پس از آن در فصل تابستان با ۱۷۰ مورد (۳۱٫۱٪) بوده است. نمودار ۱ توزیع فراوانی موارد ابتلا را به تفکیک محل سکونت (ولایت) نشان می‌دهد.

نمودار ۱: توزیع فراوانی موارد ابتلا به تفکیک محل سکونت



شفاخانه مرخص گردیده بود، ۱۲٫۸٪ در بستر فوت نموده بود و نتیجه تداوی ۱۰٫۱٪ مریضان بنابر نواقص دوسیه نا مشخص بود.

#### بحث:

در این مطالعه ۳۱۶ نفر پسر (۵۷٫۸٪) و ۲۳۰ نفر دختر (۴۲٫۱٪) بوده است و در مقایسه با تحقیقاتی در کشور نیجریه و کشور ایران که در آن مننژیت نزد پسران نسبت به دختران شیوع بیشتر داشت همخوانی دارد (۱۲،۱۳). در مطالعه‌ای در پنج کشور آفریقایی شامل در کمربند مننژیت طی سال های ۲۰۱۷-۲۰۱۵ و مطالعه دیگری در کشور کویت بیشترین رده سنی مریضی مننژیت ۱-۱۰ سال بود (۱۴-۱۵). و از این جهت با مطالعه کنونی که بالاترین فراوانی ابتلا ۲۴٫۴٪ را گروه سنی ۱-۱۰ سال به خود اختصاص داده بود همخوانی دارند.

در این بررسی بیشترین موارد ابتلا مربوط به فصل های خشک سال که شامل بهار ۱۸۴ مورد (۳۳٫۶٪) و تابستان ۱۷۰ مورد (۳۱٫۱٪) می باشد، بوده است که با مطالعات انجام شده در کردستان ایران و کشور نیجریه که در این فصل های خشک سال بنابر افزایش ذرات معلق در هوا، مننژیت شیوع بیشتر داشته همخوانی دارد (۱۲،۱۳).

شایعترین دریافت‌های کلینیکی به ترتیب شامل تب (۸۳٫۵٪)، دلبدی و استفراغ (۳۳٫۵٪)، سردردی (۱۹٫۴٪)، تغییرات حالت شعوری (۸٫۷٪) و شخی گردن (۳٫۸٪) می‌باشد.

Lumbar Puncture برای ۳۴۸ بیمار اجرا شده بود (۶۷٫۳٪)، برای ۱۸۰ مورد توصیه نگردیده بود (۳۲٫۹٪)، نزد ۱ مورد تروماتیک (۰٫۱٪)، ۱۰ مورد عدم موافقت فامیل (۱٫۸٪) و ۷ مورد dry tap (۱٫۲٪) ثبت گردیده بود. نوعیت تصویربرداری سیستم عصبی نزد ۲۸ مورد (۵٫۱٪) CT-Scan و ۱ مورد (۰٫۱٪) MRI بوده است و ۵۱۷ نفر باقیمانده (۹۴٫۶٪) هیچ گونه تصویربرداری از سیستم عصبی-شان صورت نگرفته بود. بر اساس آنالیز مایع CSF از نظر گلوکز و حجره و پروتئین فراوانی انواع تشخیص نهایی وضع شده در جدولضمیمه آورده شده است و در ضمن هیچ دریافتی از اسمیر و کشت مایع CSF در دوسیه بیماران موجود نبوده است.

اکثریت مریضان کمتر از ۷ روز در بستر مانده بودند، ۳۶۸ مورد (۶۷٫۳٪) و تنها ۴ مورد (۰٫۷٪) بین ۲۸-۳۵ روز داخل بستر بوده‌اند. توزیع فراوانی مربوط به حالت مرخص شدن مریض که مبین نتیجه درمان می‌باشد طوری دریافت گردید که اکثریت مریضان (۵۱٫۴٪) به تصمیم ویزیت از



نتایج این مطالعه حاکی از وجود تریاد تب، تهوع و سردرد بعنوان شایعترین علائم مرضی بوده است که با پژوهشی بر روی ۵۲ مریض در شهر کرمانشاه ایران همخوان میباشد و از نظر شایعترین یافته کلینیکی که تب می باشد با تحقیقی در کشور کویت طی سال های ۲۰۱۵-۲۰۱۰ که در ۹۴٫۴ درصد موارد موجود بود همراستا می باشد (۱۵،۱۶).

هنگامی که پزشکان با کودک مشکوک به مننژیت روبرو میشوند وجود علائمی همچون سردرد، تحریک پذیری بیش از حد، بیحالی شدید، استفراغ های جهنده و صبحگاهی، فانتانل برجسته، اتساع وریدهای پوست سر، افزایش دور سر، کاهش شدید یا ناگهانی هوشیاری، علائم فوکال عصبی بخصوص تشنجهای یکطرفه یا فلج اعصاب جمجمه‌ای، وضعیت دکورتیکه که با تحریک دردناک اندام ها به وضعیت فلکشن در می آید، یا دسربره که با تحریک دردناک اندام ها به وضعیت اکستنشن در می آید، تنفس نامنظم و برادیکاردی همراه با افزایش فشار خون، تغییرات اندازه مردمکها یا عدم پاسخ آنها به نور و آینه یا تنفس نامنظم علائمی هستند که پزشک را به لحاظ تصمیم گیری برای انجام Lumbar Puncture سریع دچار تردید می نمایند (۱۷-۱۹). با توجه به ملاک های ذکر شده، در مطالعه حاضر Lumbar Puncture برای ۳۴۸ مریض اجرا شده بود (۶۷٫۳٪) در حالی که تنها در ۱۰ مورد (۱٫۸٪) فامیل مریض با اجرای این پروسیجر موافقت ننموده بود. همچنین در این بررسی هیچ نتیجه‌ای از اسمیر و کشت CSF که جهت تثبیت دقیق عامل سببی لازم میباشد، در دوسیه مریضان موجود نبوده است.

Brain. CT نزد ۲۸ مورد (۵٫۱٪)، Brain. MRI برای ۱ مورد (۰٫۱٪) توصیه گردیده بود و نزد ۵۱۷ نفر باقیمانده (۹۴٫۶٪) تصویربرداری سیستم عصبی صورت نگرفته بود؛ با استناد بر مطالعه جهانی مننژیت طی سال های ۲۰۱۶-۱۹۹۰ در بسیاری مناطق جهان خصوصا در نواحی غیر شهری ظرفیت انجام تست های تشخیصی اختصاصی مننژیت مانند کشت یا معاینه Polymerase chain reaction نمونه CSF یا خون محدود بوده یا اصلا موجود نمی باشد که این محدودیت در مناطقی که دیگر انتانات مانند ملاریای دماغی بیشتر است مشکلات زیادتري را در عرصه تشخیص و تدای به موقع به میان آورده و با داده های این پژوهش همخوان می باشد (۲۰). در پژوهشی در ایالات متحده آمریکا بر داده های ۷۲۰۰۰ مریض مننژیت، بیش از نصف (۵۴٫۶٪) بستری های مننژیت به عامل ویروسی نسبت داده شد در حالی که مننژیت باکتریایی عامل (۲۱٫۸) موارد بستری بود؛ فنگس و دیگر میکروارگانیسم ها فقط در ۷٫۳٪ موارد دریافت گردید و ۱۷٫۲٪ موارد بستری از سبب مننژیت عامل ناشناخته داشت که با توجه به اکتفا به تشخیص نهایی CNS Infection در

(۵۲٫۷٪) موارد مطالعه کنونی و عدم دریافت نتایج تست های اختصاصی جهت تثبیت دقیق عامل سببی با این مطالعه در مغایرت می باشد (۲۱). اکثریت مریضان کمتر از ۷ روز بستری مانده بودند، ۳۶۸ مورد (۶۷٫۳٪) و اوسط مدت بستری آنها ۶٫۱ روز بوده است. در مطالعاتی که در آمریکا و کشور کویت صورت گرفت اوسط مدت بستری مریضان مننژیت به ترتیب ۹٫۱ و ۱۳ روز گزارش گردید که با این مطالعه همخوانی ندارد و فکر می شود این تفاوت بنابر عدم ظرفیت کافی مرکز صحت جهت بستر نمودن طولانی تر مریضان یا عدم رضایت والدین از پروسه تدای فرزندشان باشد (۲۱-۲۵). میزان مرگ و میر مریضان در این بررسی ۷۰ نفر (۱۲٫۸٪) بوده است و با مطالعه ای دیگر که در آمریکا صورت گرفت و مورتالیتی کلی ۳٫۷٪ گزارش گردید در مغایرت می باشد و این تفاوت چشمگیر نشان دهنده عدم دسترسی به موقع به خدمات صحتی و ضعف پروسه تشخیص و تدای می باشد و در ضمن باید خاطرنشان ساخت که مطابق به تحقیقات جهانی افغانستان از جمله ۱۰ کشوری میباشد که در آن مرگ و میر حاصل از مننژیت زیاد می باشد (۲۰،۲۱).

عوارض ناشی از مننژیت در هیچ یک از دوسیه ها موجود نبود که ممکن به دلیل ثبت نشدن یا کشف نشدن عوارض طی follow up مریض یا عدم مراجعه مریض یا نبود واقعی عوارض باشد. علاوه بر این ۲۵٫۶٪ مریضان به خواست والدین شان از شفاخانه برده شدند و در ۱۰٪ موارد هیچ گزارشی از نتیجه نهایی درمان موجود نبوده است و نقاط مبهم این مطالعه میباشد؛ در ضمن میزان بروز مننژیت در این بررسی ۲۶۷ در صد هزار مریض مراجعه کننده به این مرکز بود که جهت تعمیم آن به سطح شهر یا کشور نیاز به جمع آوری ارقام از سایر مراکز صحتی می باشد.

### نتیجه گیری:

بر اساس نتایج این تحقیق می توان دریافت، جنس مذکر بیشتر از جنس مونث مساعد به مرضی مننژیت می باشد. رده سنی کمتر از ۱ سال بیشترین فراوانی را داشت، به عبارت دیگر در این مطالعه وقوع این مرضی با سن رابطه معکوس داشت، بنابراین کودکان نیاز به توجه بیشتر دارند. سه ولایتی که بیشترین مراجعین را تشکیل داد به ترتیب شامل: ولایت های کابل، بغلان و پکتیا بود. در این بررسی بیشترین مریضان مننژیت در فصل های خشک سال مراجعه نموده بودند که فصل بهار زیادتري درصد را به خود اختصاص داد و نیازمند تدابیر جدی تر می باشد. با وجودی که درصد بسیار ناچیزی از والدین مریضان با انجام پروسیجر LP موافقت نداشتند، نزدیک به نیمی از مریضان LP نشدن؛ با این حال به استثنای آنالیز CSF، در هیچ دوسیه ای توصیه رنگ آمیزی گرم، کشت CSF و سایر معاینات اختصاصی تر موجود نبود که جهت تثبیت عامل

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سببی لازم میباید و نیاز به توجه جدی در این رابطه احساس می‌گردد. برای اکثریت مبتلایان هیچگونه تصویربرداری از سر توصیه نشده است که ممکن به دلیل عدم ثبت نتایج در دوسیه مریضان و یا مستضعف بودن مریضان باشد. با وجودی که ۲۵,۱٪ مریضان ABM تشخیص شد اما عامل سببی تثبیت نگردید بنابراین جهت تطبیق واکسین نمی‌توان قضاوت نمود و در ضمن اکثریت مریضان به لوحه مشکوک به عفونت سیستم عصبی مرکزی (CNS Infection) تحت تداوی قرار گرفتند و تشخیص قطعی برایشان وضع نگردیده بود.

اکثریت مریضان کمتر از هفت روز داخل بستر ماندند و اوسط مدت بستری کمتری داشتند. همچنین در این مطالعه تریاد تب، تهوع و سردرد به ترتیب به عنوان شایع‌ترین یافته‌های کلینیکی مریضان بود که می‌تواند در تشخیص و درمان هرچه سریع‌تر این مریضان موثر باشد. حدود یک چهارم مریضان دارای نتیجه نامشخص و یا در بستر فوت نمودند که با آمار کشورهای در حال توسعه همخوانی داشت؛ بناءً تشخیص نامناسب و مدیریت غیر استاندارد بنابر افزایش اختلالات طولی‌مدت و مرگ اطفال در نهایت این مریضی را به یک بار اقتصادی و اجتماعی بر دوش جامعه تبدیل نموده است.

## پیشنهادهات:

پیشنهاد می‌گردد که ترینر متخصصان محترم بر گذاشتن تشخیص قطعی و تکمیل نمودن منظم دوسیه‌ها توسط رزیدنت‌های مسئول تاکید بیشتر نموده، آگاهی عامه از طریق رسانه‌های اجتماعی و مراکز آموزشی جهت ریشه‌کن نمودن مریضی توبرکلوز و سایر امراض ساری افزایش یافته، معاینات تشخیصیه اختصاصی جهت دریافت عامل سببی مریضی برای مریضان توصیه گردد. همچنین تکمیل نمودن تجهیزات تشخیصیه شفاخانه‌ها جهت جلوگیری از ضیاع وقت در شروع تداوی قطعی، پیشنهاد می‌گردد.

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Total Research Data			
Variables	Subgroups	Frequency	Relevant Frequency (%)
IGH medical record data during year 1397	Total Hospitalization	41864	20.5
	Total death	1655	0.8
	Meningitis cases	546	0.2
	Total patients	203887	100
Sex	Male	316	57.9
	Female	230	42.1
	Total	546	100
Age groups	0-1	133	24.4
	1-3	124	22.7
	3-6	116	21.2
	6-10	104	19
	10-14	69	12.6
	total	546	100
	Badghis	3	0.5
	Badakhshan	5	0.9
	Baghlan	49	9
	Balkh	18	3.3
	Bamyan	5	0.9
	Daykundi	3	0.5
	Faryab	16	2.9
	Ghazni	17	3.1
	Ghor	4	0.7
	Helmand	3	0.5
	Jowzjan	6	1.1
	Kabul	242	44.3
	Kapisa	21	3.8
Province of origin	Khost	13	2.4
	Kunar	1	0.2
	Laghman	4	0.7
	Logar	20	3.7
	Maidan Wardak	5	0.9
	Nangarhar	9	1.6
	Nuristan	1	0.2
	Uruzgan	2	0.4
	Paktia	41	7.5
	Panjshir	1	0.2
	Parwan	19	3.5
	Kunduz	18	3.3
	Samangan	2	0.4
	Sar-e Pol	2	0.4
	Takhar	14	2.6
	Zabul	2	0.4
	total	546	100

# The association between dental caries and BMI among adolescents in National Curative and Specialized stomatology hospital

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## Abstract

**Background:** Dental caries (DC) and obesity both are multifactorial diseases that affect most of the world's population. There are conflicting results in relation with the association between dental caries and BMI. Dental caries and obesity are interlinked with each other and causes health related problems in children and adults. The aim of this research was to find the association between dental caries and BMI, some of its associated factors as well as to assess caries prevalence among adolescents.

**Methodology:** This was a descriptive-analytical cross-sectional study carried out in a central hospital on 385 individuals with age range between 10 – 19 years. The caries examination on individuals was based on WHO diagnostic criteria. Decayed teeth, missed teeth and filled teeth were recorded. Weight and height of each individual were measured and BMI calculated. The data was analyzed using SPSS software through one-way ANOVA, Pearson correlation and t-test.

**Results:** Out of 385 participants 179 of them were male and 206 were female. 67 individuals were underweight and 19 were overweight. The mean DMFT (decayed, missed and filled teeth) values for BMI categories (underweight, normal and overweight) were 1.45, 1.97 and 1.26 respectively. Based on Pearson correlation coefficient there was no association found between dental caries and BMI.

**Conclusion:** The present study did not show any association between dental caries and BMI. Since the study was not age and gender specific, hence we suggest that further studies should be carried out on different age groups and on specific gender.

**Key Words:** Dental caries, Body mass index, adolescence

## ارتباط بین پوسیدگی دندان و BMI میان نوجوانان در شفاخانه ملی معالجوی و تخصصی ستوماتولوژی

### چکیده:

**پس منظر:** پوسیدگی دندان و چاقی مریضی های چندین فکتوری هستند و بیشترین جمعیت جهان را درگیر ساخته است. در مورد ارتباط بین پوسیدگی دندان و BMI در سر تا سر جهان اختلاف نتایج وجود دارد. پوسیدگی دندان و BMI بلند با هم ارتباط دارند و باعث مشکلات صحنی در اطفال و نوجوانان شده است. هدف این تحقیق دریافت ارتباط بین پوسیدگی دندان و BMI و بعضی از فکتور های مساعد کننده و بررسی شیوع پوسیدگی دندان در بین نوجوانان بود.

**روش:** این یک مطالعه cross-sectional بود که بالای ۳۸۵ نوجوانان در بین سنین ۱۰-۱۹ در یک شفاخانه مرکزی صورت گرفت. معاینه برای پوسیدگی دندان بالای اشتراک کننده گان بر اساس معیار تشخیصی سازمان صحنی جهان صورت گرفت. دندان های پوسیدگی، از بین رفتگی و پر شده گی ثبت گردید. وزن و قد اشتراک کننده گان اندازه گیری شد و BMI تعیین گردید. BMI به حساب وزن و کتگوری های DMFT توسط Pearson correlation, one-way ANOVA و t-test با استفاده از SPSS صورت گرفت.

**نتایج:** بین ۳۸۵ اشتراک کننده گان ۱۷۹ از جنس مذکر و ۲۰۶ از جنس مؤنث بودند. ۶۷ نفر از اشتراک کننده گان BMI کمتر از نورمال (کم وزن) و ۱۹ نفر بالاتر از نورمال (اضافه وزن) داشتند. اوسط DMFT برای سه کتگوری های BMI (کم وزن، نورمال و اضافه وزن) ۱،۴۵، ۱،۹۷ و ۱،۲۶ بود. بر اساس Pearson correlation coefficient هیچ ارتباط بین پوسیدگی دندان و BMI وجود نداشت.

**نتیجه گیری:** مطالعه فعلی هیچ نوع ارتباط بین پوسیدگی دندان و BMI ثابت نکرد. چون این مطالعه خاص بر سن و جنس نبود بنابر این پیشنهاد میکنیم که تحقیقات بیشتر در مورد گروه های سنی مختلف و جنسیت خاص صورت گیرد.

**کلمات کلیدی:** پوسیدگی دندان ، BMI ، نوجوانی

### Background

Dental caries (DC) is a multifactorial disease and affects most of the world's population. It causes an irreversible destruction in human dentition and is the primary and main cause of oral pain and tooth loss<sup>(1)</sup>. It is considered one of the most prevalent diseases worldwide. All genders, races, socioeconomic status and age groups are affected<sup>(2)</sup>. The World Health Organization (WHO) reported that 60-90% of school children and 100% of adult's worldwide experience caries with an increasing frequency among adolescents and the disease being most prevalent in Asians and Latin Americans<sup>(3)</sup>. The WHO defines obesity as a condition of abnormal and excessive fat accumulation in the adipose tissue to the extent that health may be adversely affected<sup>(4)</sup>. In Eastern Mediterranean Region which also includes Afghanistan the prevalence of overweight and obesity among children

and adolescents is the second, and exceeds in the European countries<sup>(5)</sup>.

DC and high BMI are interconnected and create health related problems among children and adolescents<sup>(6)</sup>. They share common and modifiable influences such as high caloric and carbohydrate rich diet and have a dire influence on an individual's health; and can be potentially prevented by increasing knowledge and awareness of suitable oral health behaviors in addition to healthy food use<sup>(22)</sup>.

Literature provides evidence for the co-existence of obesity and DC, as they share common risk factors like consumption of free sugars, snacks, soft drinks and socioeconomic deprivation also plays its part<sup>(7, 8, and 9)</sup>. Majority of the studies carried out outside Afghanistan reported a positive association between BMI and DC<sup>(7, 10, 11, 12, 22, 23, and 24)</sup>.

These studies have highlighted the awareness among dentists about the connection between obesity and oral health among young age<sup>(13)</sup>.

Some studies reported an inverse relationship between BMI and dental caries in the primary dentition<sup>(14, 15)</sup>.

Others reported a non-linear association by showing high DMFT values in both underweight and overweight individuals<sup>(16, 17)</sup>. However, there are studies present which reported a null association<sup>(18, 19, 20, and 27)</sup>. These studies indicate that the relationship between DC and BMI is conflicting among researchers throughout the globe. These relationships must be assessed for further health promotion and prevention strategies<sup>(21)</sup>.

To our knowledge no such studies have so far been carried out in this respect in Afghanistan. Therefore, the aim of this study was to identify association between DC and BMI and some of its related factors among adolescents and assess caries prevalence.

## **Methodology:**

### **Study place and population:**

This was a descriptive-analytical cross-sectional study, which was carried in the month of June 2019. Sampling was based on convenience and included male and female subjects between 10-19 years old. The study was conducted in National Curative and Specialized Stomatology Hospital, which was the only Tertiary Dental Hospital in the entire country located in the capital city of Afghanistan (Kabul).

Male and female adolescents who visited the hospital for their routine dental treatment were included in the study. The exclusion criteria were as following: 1) Patients who were unwilling to participate 2) Remaining primary dentition 3) Patients with any systemic disease 4) Mentally retarded patients 5) Orthodontic patients 6) Married female 7) Supernumerary teeth and patients having any other dental anomalies.

### **Data collection:**

A four pages questionnaire was used with four sections to gather each subject's demographic data, height and weight, DMFT criteria, and some other questions like oral health behaviors, frequency of sugar consumption, parent's education level, family income and purpose of the visit were included. The questionnaire was filled by the investigators according to the answers provided by the guardians of the subjects and the subjects themselves by a face-to-face interview ensuring privacy and confidentiality.

The monthly family income was measured relative to the Afghanistan minimum wage by using three-point scales (low, medium and high).

Parent's education level was divided into four categories according to the education system of Afghanistan which included none or primary, middle, secondary and university/college. Oral health behaviors included information on frequency of tooth brushing, brushing motion, use of dental floss and when the subjects started tooth brushing. Frequency of tooth brushing was divided in to never or less than once a day, once a day, twice a day, more than twice a day. Use of dental floss was based on a yes/no category. Brushing motion was also recorded as appropriate and inappropriate.

Frequency of sugar consumption was divided into 4 categories (once a day, twice a day, thrice a day and more than thrice a day). The nature of dental attendance was noted according to a two-category system (planned visit, acute visit).

### **Anthropometric measurements:**

The interviewer measured the weight(kg) and height(m) at the time of interview by using a portable digital scale (LAICA-PS1059) and a wall screwed stadiometer. The body weight was taken with digital scale placed on a fir surface and calibrated prior to each weight measurement. The participants were having bare feet, wearing light clothing (as it was summer season), standing straight with empty pockets,

hands touching thighs at the sides and facing away from the scale. The weight was recorded before the subject got off the scale. Similarly, height was also taken with subjects having their shoes off, standing straight, hands touching thighs at sides and with their back and ankles touching the wall. Height and weight were determined to the nearest 0.5 grams and 0.5 cm respectively. The Body mass index (BMI;  $\text{kg}/\text{m}^2$ ) was calculated as body weight(kg) divided by height squared( $\text{m}^2$ ). BMI-for-age was calculated from the WHO Growth Reference Data for children aged 5-19 years as follows <sup>(25)</sup>.

BMI percentile of <5 for age: underweight

BMI percentile of  $\geq 5$  or <85: normal

BMI percentile of  $\geq 85$  or <95: over-weight

BMI percentile  $\geq 95$ : obese

#### **Oral examination:**

Oral examination was done followed by anthropometric measurement by a non-invasive technique and using disposable dental instruments (mouth mirror, explorer and cotton rolls) and personal protective equipment (PPE). Subjects were examined in the examination ward of the hospital on a dental chair with optimal illumination of the oral cavity. The examiner was standing in front of the chair. The used instruments were disposed immediately after each examination. Information on decayed, missing teeth due to caries and filled teeth due to caries in permanent dentition were obtained. A tooth was coded as decayed when it has one of these conditions. 1) Detectable lesions in a pit, fissure or on a smooth tooth surface that has an unmistakable cavity, undermined enamel or softened wall or floor. 2) When the crown has been destroyed by caries and only the root is left. 3) Tooth with temporary or permanent restorations but decayed. Filled tooth was coded when one or more permanent restorations were present with no caries anywhere on the crown. The permanent tooth that has been extracted because of caries was coded as missed. All questionable le-

sions were coded as Sound. Any tooth lost congenitally or due to trauma was not recorded <sup>(26)</sup>. DMFT (decayed, missed, filled teeth) for each subject was obtained by calculating the number of decayed, Missed and Filled permanent teeth.

#### **Statistical analysis:**

Data analysis was done through Statistical Package for Social Sciences (SPSS) version 25. Pearson correlation coefficient was used to assess correlation between variables. One-way analysis of variance (ANOVA) and t-tests were used to compare variance between groups.

#### **Results:**

A total of 385 subjects were recruited in the study. The values for each variable are given in Table 1. Out of 385 participants 47.5% were male and 53.5% were female. 227 subjects aged below 15 years and 158 aged 16 years and above. The BMI of 67 participants was below normal (underweight) and BMI of 19 was above normal (overweight). Only few of them were obese, that is why overweight and obese were taken in one category. Out of 385 participants 26% of them did not had caries at all i.e. DMFT=0, 60% participants had DMFT values of 1-3, and 14% of them had DMFT values  $>3$ . The frequency percentage of dental caries for underweight and overweight individuals was 59.7% and 68.4% respectively. The mean DMFT scores for underweight, normal and overweight individuals were 1.45, 1.97 and 1.26 respectively. *Table 2* shows the number of healthy and unhealthy teeth for each BMI category. *Table 1* shows the descriptive values for each variable. *Table 3* shows the correlation between DC and BMI and some its associated factors. No association was observed between BMI and DC however, there was a slight negative correlation present between father's education level and DMFT values. Also, association between age, sex and DMFT was observed i.e.; with an increase in age there is an increase in DMFT values



and also stated that females experience more caries as compared to males, such that the mean DMFT values for females and males were 2.13 and 1.51 respectively. Based on ANOVA and t-test there were no significant differences in DMFT scores for underweight, normal and overweight individuals.

### **Discussion:**

The present study showed no association between BMI and DC. As stated, before there are contradictory results regarding association between dental caries and BMI. Some have shown positive association <sup>(7, 10, 11, 12, 22, 23, 24)</sup>, some have provided negative association <sup>(14, 15)</sup> and some studies could not prove any association at all <sup>(18, 19, 20, 27, 28, 29, 30, 31)</sup>. A cross-sectional study carried out by sharma et al in 2014 in meerut district, india among 13-17 year adolescents did not show any association between BMI and dental caries even when both genders were analyzed separately <sup>(27)</sup>. Another cross-sectional study carried out by Chukwumah et al in brazil on 7-15 years old and another study by Cinar and Murtomaa in Turkey on 10-12 years old subjects showed a null association between BMI and dental caries <sup>(28, 29)</sup>. One study carried out by Elangovan et al in 2012 in a private dental college, Tamil Nadu, India on over 510 subjects with age among 6-12 years did not find out any association between dental caries and BMI <sup>(30)</sup>. The present study showed that only 9% of subjects brushed their teeth twice daily and 40% once a day. There is a daring need for oral and dental health awareness in Afghanistan. The war in Afghanistan has never come to an end and this is the reason that people could not focus on their health problems. Only 26% of the subjects had no caries while 60% had DMFT scores of 1-3 and 14% had DMFT values above 3. *fig 1*.

### **Conclusion:**

The present study did not show any association between BMI and dental caries among adolescents. We suggest that further studies should be

carried out in different areas and on particular age groups. There is a lack of dental health awareness to an extent that only a small percentage of people living in the country perform regular dental checkups. No prophylactic procedures are carried out regarding dental health in children. Health educators should put an emphasis on the importance of oral health. And further studies should be carried out on this aspect.

### **Abbreviations:**

BMI= Body mass index, DC= dental caries, DMFT= Decayed Missed Filled Teeth

### **Declarations:**

Ethical approval and consent to participate: The research proposal was reviewed and ethically approved by the institutional review board of MoPH (IRB.A.0519.0030). Also, an approval from the General Directorate of curative medicine MoPH was obtained (505861/6,3,1398). Signatures were taken from the guardians of the participants on a prewritten consent prior to any data collection. Those who were above 16 years of age signed the consent by themselves.

Consent to publish: Not applicable

Availability of data and materials: Data of the study is available from the corresponding author on reasonable request.

Competing interests: The authors had no competing interests.

Funding: Self-funded.

### **Authors contribution:**

The dental and anthropometric examinations were performed by both authors together. Data was analyzed and interpreted by the corresponding author. The final manuscript was also written by the corresponding author.

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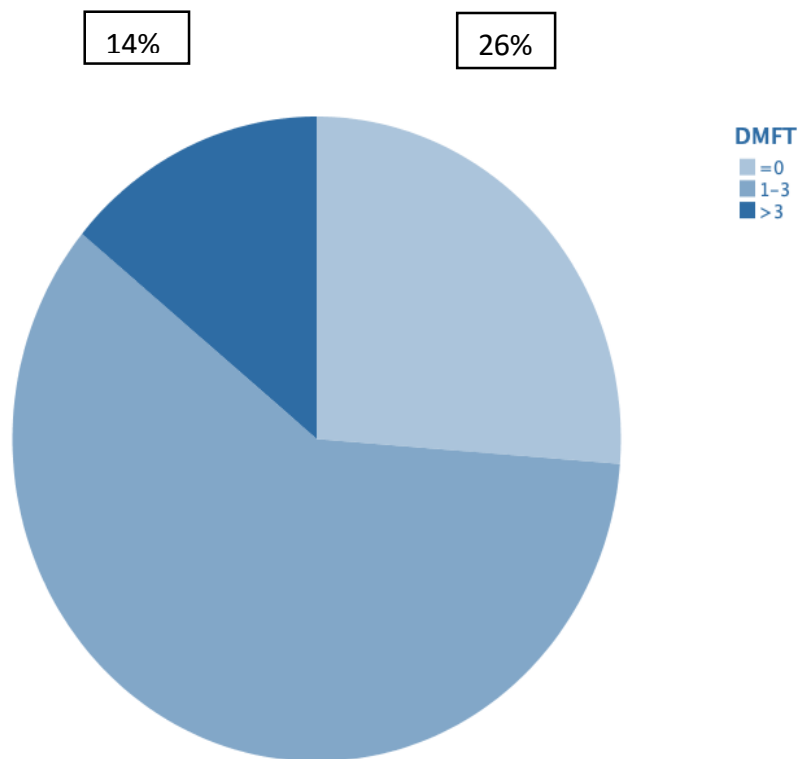
Table 1. Demographic characteristics of the participants

<b>Variables</b>	<b>values</b>
<b>Age(years)</b>	Mean=14y
<b>female gender, n (%)</b>	206(53.5%)
<b><u>BMI</u></b>	
<b>Underweight</b>	67(17.4%)
<b>Normal</b>	299(77.7%)
<b>Overweight</b>	19(4.9%)
<b><u>Family income</u></b>	
<b>Low</b>	23(6.0%)
<b>Medium</b>	247(64.2%)
<b>Hight</b>	115(29.9%)
<b><u>Tooth brushing behavior</u></b>	
<b>0 or &lt;1/day</b>	197(51.2%)
<b>1/day</b>	152(39.5%)
<b>2/day</b>	33(8.6%)
<b>&gt;2/day</b>	3(0.8%)
<b><u>Frequency of sugar consumption</u></b>	
<b>1/day</b>	181(47.0%)
<b>2/day</b>	78(20.3%)
<b>3/day</b>	80(20.8%)
<b>&gt;3/day</b>	46(11.9%)
<b><u>Father's education level</u></b>	
<b>None/primary</b>	222(57.7%)
<b>Middle</b>	54(14.0%)
<b>Secondary</b>	72(18.7%)
<b>University</b>	37(9.6%)
<b><u>Mother's education level</u></b>	
<b>None/primary</b>	335(87.0%)
<b>Middle</b>	27(7.0%)
<b>Secondary</b>	17(4.4%)
<b>University</b>	6(1.6%)
<b><u>Purpose of the visit</u></b>	
<b>Acute</b>	272(70.6%)
<b>Planned</b>	113(29.4%)

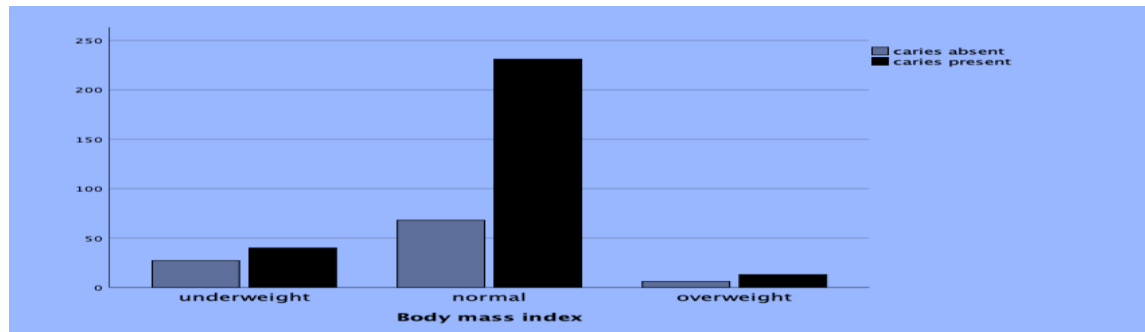
Table 2. Cross tabulation BMI (Body Mass Index) and DMFT (Decayed, Missing, Filled, Teeth)

			<u>caries</u> <u>absent</u>	<u>caries</u> <u>present</u>	<u>Total</u>
<u>BMI</u> <u>Categori-</u> <u>cal</u>	<u>1.Underweight</u>	Count	27	40	67
		percentage	40.30%	59.70%	100.00%
		Overall Total %	7.00%	10.40%	17.40%
	<u>2.Normal</u>	Count	68	231	299
		percentage	22.70%	77.30%	100.00%
		Overall Total %	17.70%	60.00%	77.70%
	<u>3.Overweight</u>	Count	6	13	19
		percentage	31.60%	68.40%	100.00%
		Overall Total %	1.60%	3.40%	4.90%
	<u>Total</u>	Count	101	284	385

Figure 1. DMFT values of 0, 1-3 and >3 for participants



**Figure 2.** Figure 3. Frequency of caries within each group



**Table 3.** Relationship between body mass index with dental caries and some its related factors among participants.

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1	<b>BMI</b>	1												
2	<b>Age</b>	0.078	1.00%											
3	<b>Sex</b>	.133**	.163**	1.00%										
4	<b>Fathers education level</b>	0.079	2.30%	-6.60%	1.00%									
5	<b>Mothers education level</b>	.115*	-0.008	-0.002	.309**	1								
6	<b>Family income</b>	-0.01	.206**	-0.05	.257**	.154**	1							
7	<b>Tooth brushing behavior</b>	.229**	.246**	.204**	.101*	.133**	0.061	1						
8	<b>Tooth brushing motion</b>	0.035	.163**	0.054	.145**	.103*	0.058	.165**	1					
9	<b>Frequency of sugar consumption</b>	0.063	-.136**	-0.006	-0.08	-0.046	0.009	-0.05	0.023	1				
10	<b>Purpose of the visit</b>	0.051	.224**	.109*	.132**	.115*	.125*	0.012	0.086	-0.07	1			
11	<b>Decayed teeth</b>	0.03	.299**	0.04	-0.08	-0.057	-0.03	0	0.027	0.074	0.001	1		
12	<b>Missed teeth</b>	0.05	.252**	.164**	-.104*	-0.055	-0.01	0.089	0.089	0.05	.146**	.165**	1	
13	<b>Filled teeth</b>	0.058	.222**	.161**	-0.07	-0.033	-0.01	.102*	0.073	0.021	.117*	0.021	.177**	1
14	<b>DMFT</b>	0.049	.413**	.173**	-.109*	-0.058	-0.03	0.083	0.078	0.06	0.098	.717**	.549**	.358**
** Correlation is significant at the 0.01 level (2-tailed).														

Correlation is significant at the 0.05 level (2-tailed).\*, Correlation is significant at the 0.01 level (2-tailed)

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## Frequency, Pattern and Causes of In-hospital Mortality in Isteqlal Hospital in 1392

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### Abstract

**Background:** Mortality rate is one of the indicators of in-hospital health service delivery and an important indicator for measuring quality improvement.

**Objective:** To assess the frequency and pattern of in-hospital mortality in all departments of Isteqlal hospital in 1392.

**Methodology:** An observational descriptive study was conducted on in-hospital mortality cases that occurred in Isteqlal hospital during 12-months period (from Hamal to Hoot 1392). During this period 32739 patients were admitted out of which 229 death cases were registered. All of these death cases were included in the study.

**Findings:** Overall mortality rate was 0.7% in the Isteqlal hospital during 1392. 49.34% were from Internal Medicine department, 38.43% from Burn department, 10.92% General Surgery and 1.31% were from OB/GYN department respectively. Female to male ratio was 1:0.9 Mean age was 45 years (12-95). Most (98%) of the mortality cases were emergency cases. 80% of cases died in the ICU. Average length hospital stay before death was 4.34 days. Main causes of death were MOF 30%, heart conditions 25% and infectious conditions 18%.

**Conclusion:** The overall mortality rate of the hospital was an acceptable figure, but mortality rate of internal medicine and burn departments was found much higher. Most of the death cases were from Intensive care units; special attention should be paid to internal medicine and burn departments and patients in the Intensive Care Unit.

## فریکونس، الگو و اسباب مرگ و میر شفاخانه ای در شفاخانه استقلال طی سال ۱۳۹۲

### خلاصه

**پس منظر:** میزان وفیات از جمله شاخص های کیفیت عرضه خدمات صحتی در یک شفاخانه میباشد. وفیات داخل شفاخانه یک شاخص مهم برای پیمایش بهبود کیفیت است.

**هدف:** بررسی تعداد و الگوی وفیات در شعبات مختلف شفاخانه استقلال در جریان سال ۱۳۹۲.

**میتودولوژی:** این تحقیق مشاهدوی-تشریحی میباشد که در مدت ۱۲ ماه از اول حمل تا اخیر حوت سال ۱۳۹۲ در شفاخانه استقلال روی واقعات فوتی که در این مدت واقع گردیده اند، صورت گرفت. در سال ۱۳۹۲ به تعداد ۳۹۳۲۷ مریض داخل بستر گرفته شد که از جمله ۲۲۹ واقعه فوتی ثبت گردید. همه واقعات فوتی سال ۱۳۹۲ شامل این مطالعه گردیدند.

**یافته ها:** در مجموع وفیات شفاخانه استقلال ۲۲۹ واقعه (۰.۷٪، مجموع مراجعه داخل بستر) در سال ۱۳۹۲ بود، که سرویس داخله ۴۹.۳۴٪، سوختگی ۳۸.۴۳٪، جراحی عمومی ۱۰.۹۲٪ و نسایی-ولادی ۱.۳۱٪ مجموع واقعات فوتی شفاخانه را تشکیل میدادند. نسبت بین زنان و مردان (۰.۹:۱) بود. اوسط سن ۴۵ (۱۲ الی ۹۵) سال بود. اکثریت (۹۸٪) واقعات فوتی مریضان عاجل بودند. بیشترین (۸۰٪) واقعات در ICU وفات نموده بودند. اوسط مدت اقامت در شفاخانه قبل از وفات ۴.۳۴ روز بود. بیشترین علت مرگ را عدم کفایه چندین عضو (۳۰٪)، اسباب قلبی (۲۵٪) و انتان (۱۸٪) تشکیل میداد.

**نتیجه گیری:** در مجموع میزان وفیات در شفاخانه استقلال در سال ۱۳۹۲ یک رقم قابل قبول است، اما فیصدی وفیات بخش داخله و سوختگی نسبت به سایر بخش ها خیلی بلند تر دریافت شد که نشان میدهد دیپارتمنت های داخله و سوختگی نیازمند توجه بیشتری میباشد. اکثر واقعات فوتی در واحد مراقبت جدی واقع شده بود؛ باید به بخش های داخله و سوختگی و همچنان مریضانی که در واحد مراقبت جدی بستری اند توجه ویژه مبذول گردد.

### پس منظر

در تحقیقی که تحت عنوان «آیا وفیات داخل شفاخانه تعیین کننده کیفیت است؟» توسط وزارت صحت ایالات متحده امریکا انجام و در سال ۱۹۸۷ میلادی در New England Journal of Medicine به نشر رسید یک مودل که میزان متوقع وفیات داخل شفاخانه را مشخص میسازد، ارائه گردیده است. این مودل بر اساس ارقام رخصت شدگی ۲۰۵۰۰۰ مریض از ۹۳ شفاخانه مربوط یک مؤسسه انکشاف داده شد. این مودل چهار متحول مستقل داشت (فیصدی مریضان بلند تر از ۷۰ ساله، فیصدی بستری شدن از طریق شعبه عاجل، فیصدی بستری شدن از آسایشگاه ها، و شاخص مخلوط واقعات شفاخانه). در این مودل ۱۱ شفاخانه شناسایی شد که در آنها میزان وفیات اصلی بیشتر از میزان متوقع بود. در ۹ شفاخانه میزان متوقع نسبت به میزان اصلی وفیات کمتر بود. در این تحقیق برای بررسی کیفیت مراقبت های فراهم شده از ارقام کلینیکی مدیکل ریکارد و وخامت مرض استفاده شد. در این تحقیق ارقام به دست آمده با پیشبینی های انجام شده بر اساس مودل میزان وفیات مقایسه گردید تا به حیث ابزار برای شناسایی شفاخانه هایی که کارمندان طبی یا نرسنگ شان به صورت درست و کافی از مریضان مراقبت نمی نمایند به کار رود.<sup>(۱)</sup> در تحقیقی که تحت عنوان «تشکیلات مسلکی، مشخصات شفاخانه و میزان وفیات شفاخانه» توسط سی ای باند و همکاران در ۳۷۶۳ شفاخانه

وفیات داخل شفاخانه یک شاخص مهم برای پیمایش بهبود کیفیت میباشد. باید همه شفاخانه ها برای ارزیابی کیفیت و همچنان بهبود کیفیت خدمات خویش ارقام راجع به وفیات داخل شفاخانه خود را برای پلانگذاری و پالیسی سازی داشته باشند. هدف از اندازه گیری و گزارش دهی وفیات مریضان داخل بستر در شفاخانه، بهبود شاخص های وفیات داخل شفاخانه میباشد. با وجودی که میزان وفیات به طور مشخص به تنهایی کیفیت مراقبت شفاخانه را تعیین نمی نماید، اما با آن ارتباط خیلی نزدیک دارد. باید میزان وفیات با آن عده از مشخصات مریضان که روی آن تأثیر دارند عیار ساخته شود. میزان وفیات شفاخانه به حیث شاخص بالقوه کیفیت به کار میرود چون در دسترس قرار دارد. با این حال، میزان تعدیل نشده وفیات شفاخانه به طور عمده ممکن است منعکس کننده تفاوت در بین مریضان بستر شده باشد نه تفاوت در کیفیت مراقبت های صحتی. ازینرو مودل های مختلفی برای تعدیل میزان وفیات شفاخانه انکشاف داده شده اند. با درج این ارقام در دیتابیس های کمپیوتری این مودل ها تفاوت در مشخصات دیموگرافیک و تشخیصی مریضان را نشان میدهند اما تفاوت بین وخامت امراض یا امراض مترافقه را مشخص ساخته نمیتوانند. این مودل ها میزان متوقع وفیات برای هر شفاخانه را ارائه مینمایند که میتواند با میزان اصلی وفیات آن مقایسه گردد.<sup>(۲)</sup>



ایالات متحده امریکا انجام و در ژورنال Pharmacotherapy در سال ۱۹۹۹ میلادی به نشر رسید ارتباط بین میزان وفیات (که نظر به وخامت مریضی عیار گردیده بود) در ۳۷۶۳ شفاخانه ایالات متحده امریکا با مشخصات شفاخانه و سویه تشکیلات در ۱۴ کتگوری کارمندان شفاخانه (۱۳ نوع کارمندان مسلکی و مجموع پرسونل شفاخانه) آزمایش شد. مشخصات شفاخانه مرتبط با میزان پایین وفیات عبارت بودند از میزان اشتغال بسترها و مالکیت خصوصی غیر انتفاعی و خصوصی انتفاعی، میزان وفیات با افزایش سویه کارمندان به شمول ریزدنت های طبی، نرس های راجستر شده، فارمستت های راجستر شده، تکنالوجیست ها و مجموع پرسونل شفاخانه فی بستر اشغال شده کاهش نشان داد. میزان وفیات با افزایش سویه کارمندان به شمول مدیران شفاخانه و نرس های سویه پایین افزایش یافت. در این مطالعه ارتباط موجودیت فارمستستان با میزان کمتر وفیات نشان داده شده است. (۲)

مسایل مربوط به میزان وفیات شفاخانه به طور واضح در وسط قرن ۱۹ میلادی بیان گردید. بین ۱۸۶۱ تا ۱۸۶۵ میلادی در Journal of the Statistical Society of London یک سلسله مقالات به نشر رسید که در آن ها میزان وفیات شفاخانه ها گزارش داده شد. فلورانس نایتنگال طرفدارن نشر آمار متحدالشکل شفاخانه ها بود چون امکان معلوم نمودن وفیات نسبی شفاخانه های مختلف و همچنان امراض و ترضیضات مختلف را فراهم میساخت. با این حال، علاقمندی به تفاوت میان میزان وفیات شفاخانه ها تا اخیر دهه ۱۹۸۰ میلادی به شکل پراکنده وجود داشت. تا این که در سال ۱۹۸۹ میلادی در ایالات متحده امریکا نشر میزان وفیات شفاخانه ها که توسط USA Health Care Financing Administration صورت گرفت باعث افزایش علاقمند به تحلیل میزان وفیات شفاخانه ها گردید. هدف از پیمایش و گزارش دهی میزان وفیات شفاخانه ها انکشاف دادن شاخص های ملی برای وفیات داخل شفاخانه ها میباشد. اکنون توافق نظر در مورد این که در نمونه های محاسبه میزان وفیات شفاخانه ها عواملی از قبیل مشخصات مریض (سن و تشخیص) و HSMR گنجانیده شوند وجود دارد. اکنون در چندین کشور از قبیل بریتانیا، هالند، کانادا و استرالیا میزان وفیات شفاخانه با در نظر داشت تعدیل خطرات به صورت روتین گزارش داده میشود. (۳)

در سال ۱۹۹۸ میلادی سنجش امراض مترافقه Elixhauser برای شناسایی میزان خطر افزایش وفیات یا بستری شدن مجدد در شفاخانه انکشاف داده شد. در این سیستم برای هر کدام از امراض مترافقه یک نمره در نظر گرفته شده که از آن برای عیار سازی نظر به خطرات استفاده میگردد.

محققین روی امراض مترافقه و وفیات داخل شفاخانه انجام داده و بین آنها یک رابطه قابل ملاحظه دریافت نمودند. (۴)

میزان وفیات داخل شفاخانه ۲.۶ الی ۳.۲۷ فیصد گزارش شده است. (۳۴) از این ارقام برای بررسی کیفیت عرضه خدمات صحتی در شفاخانه های مختلف نیز استفاده به عمل آمده میتواند. در حال حاضر در کشور ما افغانستان کدام سیستم مشخص برای ارزیابی و بررسی وفیات شفاخانه ها وجود ندارد و همچنان کدام میزان وفیات به سطح ملی مشخص نگردیده است تا کیفیت مراقبت های صحتی در شفاخانه های کشور با آن مقایسه شده بتواند. تلاش میشود که این یک گام کوچک و ابتدایی در این راستا مفید ثابت شود و راه را برای تحقیقات گسترده تر باز نماید. امید که به زودی سیستم سرویلانس وفیات به سطح کشور ایجاد و میزان وفیات به سطح کشور معلوم گردد تا با استفاده از آن پالیسی های دقیقتری برای بهبود کیفیت خدمات صحتی به سطح شفاخانه ها طرح و عملی گردند. هدف از این تحقیق دریافت میزان کلی وفیات و همچنان نظر به سن، جنس، دیپارتمنت، دریافت اسباب عمده وفیات، نوع مراجعه، مدت اقامت قبل از وفات، محل وفات و ایجاد یک دیتابیز برای درج واقعات فوتی در شفاخانه استقلال بود.

### میتودولوژی

این تحقیق مشاهدوی-تشریحی به شکل تسلسل موردی در مدت ۱۲ ماه از اول حمل تا اخیر حوت سال ۱۳۹۲ هجری خورشیدی در شفاخانه استقلال روی واقعات فوتی که در این مدت واقع گردیدند، صورت گرفت. نفوس تحت این مطالعه را همه واقعات فوتی تشکیل میداد که طی این مدت به شفاخانه استقلال مراجعه و در دیپارتمنت های مختلف آن بستر و تحت تدلوی قرار گرفته بودند. در سال ۱۳۹۲ مجموعاً ۲۲۹ واقعه فوتی ثبت شد که همه شان شامل کار تحقیقی گردیدند. معیارات شمول را واقعاتی تشکیل میداد که داخل بستر بوده و دوسیه داشتند. معیارات خروج شامل واقعاتی بود که در حالت فوت شده به شفاخانه آورده شده بود و یا در دوسیه ارقام به طور کامل درج نگردیده بود. در ۴ واقعه سن درج دوسیه نبود که شامل محاسبه نگردید. همچنان در یک مورد نوع مراجعه و در یک مورد محل فوت ذکر نشده بود، که البته این یک رقم ناچیز بوده و روی محاسبات تأثیر نمیگذارد. ارقام با استفاده از یک جدول جمع آوری ارقام که در آن متحول های دیموگرافیک (شماره دوسیه، سن، جنس، حالت مدنی، سکونت، دیپارتمنت که در آن بستر بوده و وفات نموده) و متحول های وفیات (اسباب، امراض مترافقه، نوع مراجعه، مدت اقامت در شفاخانه، شعبه ای که در آن مریض وفات نموده) شامل گردیده بود از روی دوسیه های واقعات فوتی و کتاب های راجستر شفاخانه جمع آوری

گردید. ارقام حاصله در نرم افزار احصایوی GNU-PSPP که معادل SPSS میباشد درج و تحلیل شد.

#### یافته ها

بر طبق این تحقیق میزان مجموعی وفیات شفاخانه ۰,۷ دریافت گردید که با در نظر داشت میزان مجموعی مراجعه داخل بستر، یک رقم قابل قبول است. میزان وفیات شفاخانه در انث و ذکور تقریباً مشابه دریافت شد (۱,۰۶:۱) اوسط سن وقعات فوتی در سال ۱۳۹۲ در شفاخانه استقلال ۴۵

سال (انحراف معیاری ۲۱,۸۵)، بلند ترین سن ۹۵ سال و پایینترین سن ۱۲ سال بود. تعداد وقعات فوتی که به شکل عاجل مراجعه نموده بودند ۲۲۶ (۹۸,۷٪) و صرف ۲ واقعه به شکل انتخابی بستر شده بودند که ۰,۸۷٪ وقعات را تشکیل میدهد. همچنان، بیشترین تعداد وفیات در ICU واقع گردیده بود (۸۰,۴٪)، اما تعداد وقعات فوتی در وارد عمومی نیز یک رقم قابل ملاحظه دریافت گردید (تعداد ۴۴، ۱۹,۲٪). در بخش سوختگی وفیات در وارد عمومی و ICU تفاوت قابل ملاحظه نداشت (۰,۹:۱)، اما در سایر بخش ها اکثر وقعات فوتی در ICU بود. (جدول ۱).

جدول ۱: وفیات شفاخانه استقلال در سال ۱۳۹۲

متغیرات	تعداد	(%)
سن (اوسط)		
ذکور	۴۶,۲۵	سال
اناث	۴۴,۶۷	سال
مجموع	۴۵,۴۴	سال
جنس		
ذکور	۱۱۱	(۴۷,۴۸)
اناث	۱۱۸	(۵۱,۵۳)
نوع بستر شدن		
عاجل	۲۲۶	(۹۸,۶۹)
انتخابی	۲	(۰,۸۷)
محلی که وفات واقع شده		
واحد مراقبت جدی	۱۸۴	(۸۰,۳۵)
وارد عمومی	۴۴	(۱۹,۲۱)

شفاخانه بستری مانده بودند. به تعداد ۶۰ مریض کمتر از ۱ روز در شفاخانه بستری مانده بودند که یک رقم قابل ملاحظه میباشد (جدول ۲).

اوسط مدت بستری ماندن مریضان در شفاخان ۳۴,۴ روز (انحراف معیاری ۱,۶) بوده و بیشترین وقعات فوتی (۵۴٪) برای مدت ۱ تا ۷ روز در

جدول ۲: وفیات نظر به مدت اقامت داخل بستر

اقامت داخل بستر	تعداد	(%)
کمتر از ۱ روز	۶۰	(۲۶,۳۲)
۱ الی ۷ روز	۱۲۴	(۵۴,۱۵)
بیشتر از ۷ روز	۴۴	(۱۹,۲۱)
Missing	۱	(۰,۴۴)

سوختگی، امراض تنفسی، امراض قلبی و به تعقیب آنها جراحی تشکیل داده بود (جدول ۳).

بیشترین علت های فوری مرگ و میر در شفاخانه استقلال را اسباب قلبی، تنفسی، انتان و MOF (عدم کفایه اعضای متعدد) تشکیل میداد، در حالی که اسباب اصلی وفیات شفاخانه استقلال را در سال ۱۳۹۲ آفاتی از قبیل

جدول ۳: اسباب وقایعات فوتی

اسباب فوری	تعداد	(%)	اسباب اساسی	تعداد	(%)
عدم کفایه چندین عضو	۷۲	(۳۱,۴۴)	سوختگی ناشی از آتش	۷۹	(۳۴,۵۰)
قلبی	۵۷	(۲۴,۸۹)	امراض قلبی	۳۷	(۱۶,۱۶)
انتان	۴۲	(۱۸,۳۴)	امراض تنفسی	۳۰	(۱۳,۱۰)
تنفسی	۳۰	(۱۳,۱۰)	متفرقه	۲۶	(۱۱,۳۵)
دورانی	۱۱	(۴,۸۰)	جراحی	۲۴	(۱۰,۴۸)
انتان	۳	(۱,۳۱)	سوختگی برقی	۷	(۳,۰۶)
کلیوی	۶	(۲,۶۲)	امراض کلیوی	۷	(۳,۰۶)
سیستم عصب مرکزی	۱	(۰,۴۴)	تسممات	۶	(۲,۶۲)
متفرقه	۱	(۰,۴۴)	نامعلوم	۶	(۲,۶۲)
			خونریزی	۴	(۱,۷۵)
			نامعلوم	۹	(۳,۹۳)

جدول ۴: تعداد و فیصدی وفیات نظر به دیپارتمنت

دیپارتمنت	مجموع داخل بستر	تعداد وفیات	فیصدی وفیات (نظر به مجموع بستر)	فیصدی وفیات (نظر به مجموع وفیات)
سوختگی	۹۹۱	۸۸	۸,۸۸	۳۸,۴۳
داخله	۳۱۰۲	۱۱۳	۳,۶۴	۴۹,۳۴
جراحی	۳۶۵۴	۲۵	۰,۶۸	۱۰,۹۲
نسای و لادی	۲۴۹۹۲	۳	۰,۰۱	۱,۳۱
مجموع	۳۲۷۳۹	۲۲۹	۰,۷	۱۰۰

## مناقشه

نتایج این تحقیق نشان می‌دهد که فیصدی وفیات شفاخانه استقلال در سال ۱۳۹۲ به طور مجموعی ۰,۷ بود، که از نظر معیارات بین المللی یک رقم قابل قبول می‌باشد. البته با در نظر داشت این که یک میزان استاندارد وفیات به سطح کشور وجود ندارد، ارقام حاصله از این تحقیق را می‌توان به حیث آغاز تعیین میزان وفیات شفاخانه استقلال قبول نمود. از این الگو برای شفاخانه های ملی دیگر نیز استفاده شده می‌تواند. نظر به یافته های این تحقیق در مجموع تعداد وفیات در دیپارتمنت داخله عمومی به درجه اول، دیپارتمنت سوختگی به درجه دوم، دیپارتمنت جراحی عمومی به درجه سوم و دیپارتمنت نسای-ولادی به درجه چهارم قرار داشتند؛ اما فیصدی وفیات نظر به تعداد داخل بستر هر دیپارتمنت در طول سال ۱۳۹۲ در دیپارتمنت سوختگی به درجه اول، دیپارتمنت داخله به درجه دوم،

دیپارتمنت جراحی عمومی به درجه سوم و دیپارتمنت نسای-ولادی به درجه چهارم قرار داشت (به جدول ۴ ملاحظه شود). در این جا دیده میشود که میزان وفیات دیپارتمنت سوختگی خیلی بیشتر از دیگر دیپارتمنت ها بوده است. علت آن ممکن این باشد که سرویس سوختگی شفاخانه استقلال یگانه سرویس سوختگی به سطح پایتخت بوده و همه مریضان سوختگی به سطح مرکز و ولایات به آن مراجعه مینمایند و تنها یک سرویس سوختگی دیگر در شهر هرات در کشور وجود دارد.

در این تحقیق دریافت گردید که وقایعات فوتی از نظر جنس در اناث اندکی از ذکور بیشتر بوده اما تفاوت شان قابل ملاحظه نیست (۱:۰۶:۱). در لیتراتور طبی نیز میزان وفیات داخل شفاخانه در اناث نسبت به ذکور اندکی بیشتر گزارش شده است. از نظر سن، درکار تحقیقی ما اوسط سن در

نتایج این تحقیق نشان می‌دهد که فیصدی وفیات شفاخانه استقلال در سال ۱۳۹۲ به طور مجموعی ۰,۷ بود، که از نظر معیارات بین المللی یک رقم قابل قبول می‌باشد. البته با در نظر داشت این که یک میزان استاندارد وفیات به سطح کشور وجود ندارد، ارقام حاصله از این تحقیق را می‌توان به حیث آغاز تعیین میزان وفیات شفاخانه استقلال قبول نمود. از این الگو برای شفاخانه های ملی دیگر نیز استفاده شده می‌تواند. نظر به یافته های این تحقیق در مجموع تعداد وفیات در دیپارتمنت داخله عمومی به درجه اول، دیپارتمنت سوختگی به درجه دوم، دیپارتمنت جراحی عمومی به درجه سوم و دیپارتمنت نسای-ولادی به درجه چهارم قرار داشتند؛ اما فیصدی وفیات نظر به تعداد داخل بستر هر دیپارتمنت در طول سال ۱۳۹۲ در دیپارتمنت سوختگی به درجه اول، دیپارتمنت داخله به درجه دوم،

## اختصارات

MOF: Multiple Organ Failure

ICU: Intensive Care Unit

CNS: Central Nervous System

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واقعات فوتی داخل شفاخانه ۴۵ سال دریافت شد. با در نظر داشت این که توقع حیاتی در افغانستان ۴۷ تا ۴۹ سال است، دریافت این رقم دور از انتظار نیست. در کار تحقیقی ما دریافت شد که اکثریت (در حدود ۹۹٪) واقعات فوتی به شکل عاجل به شفاخانه مراجعه نموده بودند. از این که واقعات عاجل نسبت به واقعات انتخابی از ریسک بلند تری برخوردار میباشند، دریافت این رقم متوقع میباشد، اما لازم است تا به مریضان عاجل توجه بیشتری مبذول گردد. در کار تحقیقی ما محل فوت اکثر واقعات فوتی ICU (واحد مراقبت جدی) دریافت شد. مریضانی که در ICU بستری میباشند از جمله مریضان وخیم اند که به مراقبت جدی نیاز دارند و نسبت به مریضان دیگر ریسک خیلی بلند تری دارند. ازینرو، این دریافت نیز متوقع بود. اما در سرویس سوختگی شفاخانه استقلال تفاوت بین واقعات فوتی در ICU و وارد چشمگیر نبود (۱،۱۳:۱) که نشان میدهد میزان وفيات در وارد سوختگی قابل ملاحظه میباشد. اوسط مدت بستری ماندن واقعات فوتی در شفاخانه ۴،۳۴ روز دریافت گردید. بیشترین تعداد واقعات فوتی (۵۴٪) بین ۱ تا ۷ روز در شفاخانه بستری مانده بودند، و به تعداد ۶۰ واقعه فوتی (۲۶٪) کمتر از ۱ روز در شفاخانه بستری بوده اند که یک رقم قابل ملاحظه میباشد. البته اکثراً واقعات فوتی که پیش از ۴۸ ساعت در شفاخانه وفات نموده باشند به حیث وفيات شفاخانه محاسبه نمی گردند. در کار تحقیقی حاضر بیشترین علت فوری مرگ به اسباب قلبی، تنفسی، انتان و عدم کفایه چندین عضو دریافت گردید. در این میان انتان نیز به حیث یکی از اسباب عمده مرگ و میر در شفاخانه استقلال دریافت گردیده است که ایجاب مطالعه و توجه بیشتر را برای دریافت علت آن مینماید. در حالی که سبب اصلی مرگ در این تحقیق سوختگی، امراض تنفسی، امراض قلبی و به تعقیب آنها جراحی دریافت شد، در تعداد قابل ملاحظه واقعات علت مرگ نامعلوم گزارش شده بود که ایجاب مینماید علت و دیگر مشخصات مرگ در دوسیه های مریضان به شکل دقیق و درست درج گردد.

## نتیجه گیری

در مجموع میزان وفيات در شفاخانه استقلال در سال ۱۳۹۲ یک رقم قابل قبول است، اما فیصدی وفيات داخله و سوختگی نسبت به سایر بخش ها خیلی بلند تر دریافت شد که نشان میدهد دیپارتمنت های داخله و سوختگی نیازمند توجه بیشتری میباشد. اکثر واقعات فوتی در واحد مراقبت جدی واقع شده بود که نشان میدهد باید سطح مراقبت و حفظ الصحه در واحد مراقبت جدی همه بخش ها بهبود یابد.

# Hirschsprung's Diseases in an Afghan Adult Girl-Case Report

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## Abstract:

Hirschsprung's Diseases is a known cause of chronic constipation during childhood which can be diagnosed during infancy or later and requires surgical intervention for treatment. This disease is very rare in adults and needs careful investigations for confirmation and treatment. Here we report a case of 22 years old girl presented to ER complaining suddenly started abdominal pain and vomiting. Her past history showed a chronic constipation since childhood with many conservative treatments done for symptom's relief. A diagnosis of acute bowel obstruction was made and the patient was hospitalized for further investigation and treatment.

**Keywords:** Adult Hirschsprung Diseases, Chronic Constipation, Cologram, Rectal Biopsy, Colorectal diseases

## چکیده

مرض هیرشپرونگ یکی از اسباب قبضیت های مزمن در دوران طفولیت است که در دوره شیرخوارگی یا بعدتر تشخیص شده و نیازمند مداخله جراحی برای مداوی می باشد. این مرض در کاهلان بسیار نادر بوده و نیازمند معاینات دقیق لابراتواری برای تایید و مداوی می باشد. در اینجا ما گزارشی از دختر ۲۲ ساله ایی که با شکایت از درد حاد بطنی و استفراغات به سرویس عاجل مراجعه نموده بود را، داده ایم. تاریخچه گذشته او نشاندهنده یک قبضیت مزمن از زمان طفولیت بوده که با مداوی های محافظوی زیادی برای بهبود اعراض و علایم به همراه بوده است. نزد مریض تشخیص انسداد حاد معایی گذاشته شده و برای مداوی و ارزیابی بیشتر، بستر گردید.

**کلمات کلیدی:** مرض هیرشپرونگ در کاهلان، قبضیت مزمن، کولوگرام، بیوپسی ریکتوم، امراض کولونی ریکتومی

## Introduction:

**H**irschsprung's Diseases is a congenital maldevelopment of enteric nervous System that is characterized by absence of ganglionic cells in sub mucosal and muscular layers of colon. The best theory of describing the cause is about migration of neuroblasts from neural crest through the distal parts of GI system<sup>(1,2)</sup>. Although it is considered to be a childhood period disease, but still many reports can be found in literature confirming its prevalence as well as diagnosis and treatment done in adults<sup>(3-7)</sup>. Its presenting symptoms vary from chronic constipation and encopresis to acute bowel obstruction<sup>(1,4,6)</sup>. The treatment is surgery and till now many procedures have been introduced based on patient's age, type of disease and surgeons expertise<sup>(2,4)</sup>. The aim of this report is; 1, to notice the presentation of Hirschsprung's diseases in adulthood in our country, 2, how a false-negative report can be prevented and 3, how parents' inattentiveness interrupted the treatments.

## Case Report:

A 22 years old girl presented to emergency room due to abdominal pain and vomiting since last three days and constipation for last 10 days. The pain had suddenly started from the abdomen and became more severe than the start appearing to be on and off. She had vomited three times and the content were eaten foods.

Constipation was present from 10 days back and she could pass flatus till last night. The past history indicated that, she had constipation since neonatal period.

According to her mother she didn't pass her meconium for 4 days, after birth, until they took the girl to pediatrician. There, after applying low enema, the girl passed her meconium. After that she always had constipation till end of her infancy, which the parent took her to pediatric surgeon, and at that time diagnosis of Hirschsprung diseases was probable, but due to poor economic condition they couldn't do the

lab investigations. So, the patient grew up with this problem until adolescence. It was found in family history that none of her family members neither her siblings had the same diseases. During her studies in preliminary and high school, because of mobility, she was better and each constipation period was less than a week. But after her graduation from high school and restricted mobility, the constipation period increased up to 12 to 14 days and even sometimes the patient had to use low enema for defecation. 2 years ago, she had been hospitalized for the same abdominal pain and vomiting in another center and managed conservatively. Then, after doing a cologram, the possibility of HD has been made (figure 1). When she had been planned for a rectal biopsy, her parents refused for taking biopsy. After discharging from hospital, 2 more attacks with the same manner was experienced by her, and had been resolved spontaneously, but this time it was very severe and its duration was longer.

On physical examination, she was dehydrated and irritable, by inspection abdomen was distended and participating in respiration. By auscultation hyperactive bowel sounds were audible and by palpation the abdomen was slightly tender through the whole parts. Her vital signs were within normal range, other systemic examination was unremarkable. In laboratory investigation, leukocytosis with shifting to left side were present. In abdominal X-ray, hydroairic level noted (Figure 2). The possibility of bowel obstruction due to Hirschsprung's diseases made and the patient hospitalized. Then she planned for laparotomy and colostomy. By opening the abdomen, the bowel loops were very dilated especially in recto-sigmoid, sigmoid and descending parts.

Then partial loop colostomy done, but after that, a full thickness biopsy sample from colostomy site was taken by surgeon. 2 days after the operation, when the patient's condition become

stable and stoma found good function, she discharged. 15 days later, parents brought the biopsy result. In histopathology examination neural cells identified in biopsy. Again, 2-month post operation another biopsy from rectum was taken. In this examination neural cells were



Figure 1: Colo gram of the patient in 2016 (25 hours after insertion of contrast by folly catheter through rectum). Pay attention to the narrowing side of the rectum (long arrow) and the dilated pouch of rectum (short arrow).

### Discussion:

Hirschsprung's disease is caused by mal development of ganglionic cells in muscular layer of bowel loops starting from rectum (ultra-short types) to intestine (total types) or a very rare cases of segmental types<sup>(5)</sup>. This disease is always diagnosed during infancy and childhood, and rarely presents in adults<sup>(3)</sup>. In our case the patient is a 22years old girl with chronic constipation since neonatal period, who had been diagnosed or at least the possibility of HD was made for her in childhood, but due to poor socio-condition, illiteracy and inattention of her parents, she remained with this condition for years until the acute bowel obstruction occurred. In lab

absent and confirmed the HD diagnosis. While surgeon was planning for her next operation, her parents refused to operate her and decided to continue her treatment outside the country.

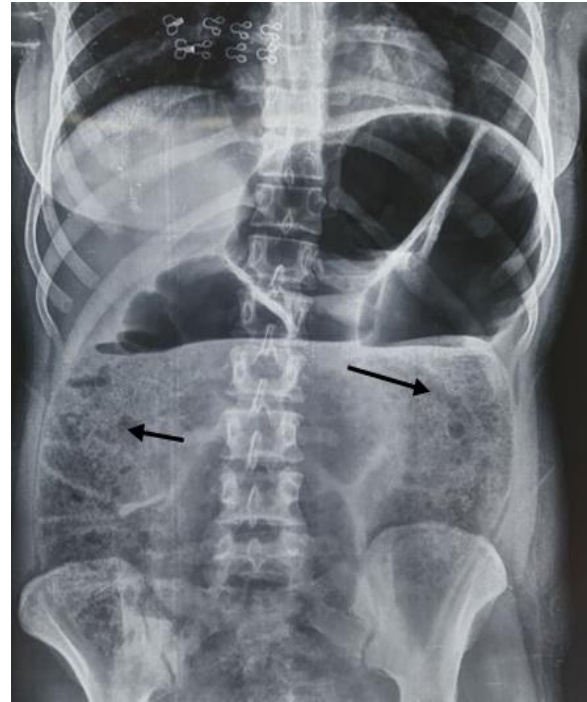


Figure 2: Patient presented in 2019 with acute bowel obstruction symptoms. Look at the dilated and fecal loaded colons (arrows).

investigations, although kilogram or low barium enema is very helpful in diagnosis but still rectal biopsy is the golden standard in diagnosis<sup>(1,3,6)</sup>. the patient not only had a narrowed segment of the colon or rectum with dilated proximal rectum, but also a lifelong history of refractory constipation for confirming the diagnosis. As in this case, taking biopsy from other places of bowel especially from dilated zone caused a false-negative result, while taking a full thickness biopsy from rectum confirmed the diagnosis.

### Conclusion:

Although Hirschsprung's disease is very rare in adults it should be in consideration in those patients with history of prolonged constipation from childhood period.

**Conflict of Interest:**

I have no conflict of interest.

**Acknowledgments:**

I want to thank from the patient and her family, who trusted me and let me to write this report.

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# Low immunization coverage causes outbreaks: analysis of four measles outbreak in Kabul, 2018

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## Abstract

**Background:** WHO estimated that measles infected 30 million persons and 454,000 deaths annually all over the world? Descriptive epidemiology of reported outbreaks in Kabul and its linkage to vaccination coverage is not clear. This study aims to describe outbreaks in terms of time, place, persons and immunization status in affected areas.

**Methods:** We conducted a retrospective analysis of measles data and calculated Attack Rate(AR), Case Fatality Rate(CFR), vaccine coverage and described data in terms of time, place and persons. Management and analysis of collected information was performed using Excel and Epi info 7.

**Results:** There were 215 outbreaks of measles reported and investigated in 2018 in Afghanistan, out of which four outbreaks were reported in Kabul province. these outbreaks contained 400 cases (50% female) of them 172 (43%) cases were confirmed, 20 (5%) probable and 208 (52%) suspected. Totally 269 (67%) were hospitalized and 2 deaths were reported in the Dihsabz district. Most of the cases are unvaccinated or incompletely vaccinated. The districts of Shakardara, Dih sabz, Chahar asiab and other different areas which are referred to Indra gandhi national hospital, were areas affected by the outbreak. likewise, in the Dihsabz district the village of Bakhtaran, child deaths due to measles were also reported (1 male & 1 female). The mean age was 3.8 years, standard deviation was 4.55 year and the median was 2 years with a range of <0 to 39 years. The male to female ratio was about 1.01:0.99. Overall 257 (64%) cases received zero dose of measles vaccination while 143 (36%) were vaccinated against measles 44 (31%) got the first dose and 99 (69%) got the second dose), but were still affected by the measles. The vaccination coverage was 15% in Chahar- Asiab, 0% in Deh-Sabz and 67 % in Shakar-Dara districts. Case Fatality Rate (CFR) was 4.3%. Majority of cases were 280 (70 %) among age group 0-4 years and the overall attack rate was 59/100000 population.

**Conclusion:** Measles outbreaks affected rural districts of Kabul province due to low immunization coverage. Ministry of public health should focus on feasible strategies to improve immunization coverage in Kabul province. Although 25% of the cases were vaccinated against measles but the reason why they are still symptomatic, requires more investigation.

**Key words:** Measles, Kabul, Outbreak, AR, CFR

## اوتبریک ها " یا طغیان ها " از سبب پوشش پایین واکسیناسیون: تجزیه و تحلیل چهار اوتبریک سرخکان در کابل، ۲۰۱۸

### خلاصه

**پس منظر:** به اساس تخمین سازمان صحتی جهان سرخکان سالانه ۳۰ میلیون نفر را در سراسر جهان آلوده و ۴۵۴۰۰۰ مرگ و میر را سبب میشود. اپیدمیولوژی توصیفی اوتبریک گزارش شده در کابل و ارتباط آن با پوشش واکسیناسیون مشخص نیست. هدف این مطالعه توصیف شیوع بیماری از نظر زمان، مکان و افراد و بازتاب ایمن سازی در مناطق آسیب دیده است.

**مواد و روش ها:** ما یک تجزیه و تحلیل گذشته نگر از ارقام سرخکان انجام دادیم. ما میزان حمله، میزان کشنده گی واقعات، پوشش واکسن را محاسبه کردیم و ارقام را از نظر زمان، مکان و افراد شرح دادیم. برای مدیریت، تجزیه و تحلیل ارقام از پروگرام های Excel و Epi Info 7 استفاده شده است.

**نتایج:** در سال ۲۰۱۸ مجموعاً ۲۱۵ اوتبریک سرخکان در افغانستان گزارش شده و مورد بررسی قرار گرفته بود که از این جمله چهار اوتبریک در شهر کابل گزارش شده بود. این شیوع شامل ۴۰۰ مورد (۵۰٪) زن از این تعداد ۱۷۲ مورد (۴۳٪) موارد تایید شده، ۲۰ مورد (۵٪) احتمالی و ۲۰۸ مورد (۵۲٪) موارد مشکوک بودند. در مجموع ۲۶۹ نفر (۶۷٪) در شفاخانه بستری شده و ۲ مورد مرگ در منطقه ده سبز گزارش شده بود. بیشتر موارد واکسین نا تکمیل یا هیچ واکسین نشده بودند. ولسوالی های شکرده، ده سبز، چهار آسیاب و ساحات متفاوت دیگری که آنها به شفاخانه ایندرا گاندی مراجعه نموده بودند، مناطقی بودند که از اوتبریک متاثر شده بودند. به همین ترتیب، در منطقه ده سبز دو مورد فوتی گزارش شده بود (۱ مرد و ۱ زن). میانگین سنی ۳٫۸ سال، انحراف معیاری ۴٫۵۵ سال و متوسط ۲ سال با دامنه >۰ تا ۳۹ سال بود. نسبت مرد به زن در حدود ۱،۰۱:۰،۹۹ بود. به طور کلی ۲۵۷ نفر (۶۴٪) در مقابل سرخکان واکسین نشده بودند در حالی که ۱۴۳ نفر (۳۶٪) بر علیه سرخک واکسین شدند ۴۴ نفر (۳۱٪) دوز اول و ۹۹ نفر (۶۹٪) دوز دوم را دریافت کرده، اما با آن هم مبتلا به سرخکان شدند. پوشش واکسیناسیون ۱۵ درصد در چهار آسیاب، ۰ درصد در ده سبز و ۶۷ درصد در مناطق شکرده بود. میزان کشنده گی مرض ۴،۳٪ اکثر موارد ۲۸۰ نفر در گروه سنی ۰-۴ سال ۷۰٪ بود. میزان حمله به طور کلی ۱۰۰۰۰۰/۵۹ جمعیت بود.

**نتیجه گیری:** اوتبریک سرخکان ولسوالی های روستایی شهر کابل را به دلیل کمبود پوشش واکسیناسیون آسیب رسانیده بود. وزارت صحت عامه باید برای بهبود پوشش واکسیناسیون در شهر کابل بر استراتژی های ممکنه تمرکز نماید. اگرچه ۲۵٪ از موارد در برابر سرخکان واکسین شده بودند اما چرا هنوز هم اعراض و علائم داشتند؟ بناء تحقیقات بیشتری در این خصوص لازم دارد.

**واژه های کلیدی:** سرخکان، کابل، اوتبریک، میزان حمله، میزان کشنده گی مرض

## Introduction:

**M**easles is a highly infectious, acute viral disease that can cause rash, fever, diarrhea, pneumonia, encephalitis, and death among fewer than five years' old children worldwide. The World Health Organization estimated that measles infects 30 million persons and causes 454,000 deaths annually worldwide<sup>(1)</sup>. Before introduction of vaccination in the United States in 1963, measles caused an estimated 4 million cases, with 48 000 hospitalizations and 500 deaths reported annually<sup>(2,3)</sup>. Elimination of measles in Europe by 2010 was a health goal of the European region of the World Health Organization<sup>(4)</sup>. Most Public health authorities believe that the primary mode of transmission is by large respiratory droplets which remain suspended in air for short time intervals<sup>(5)</sup>. Measles was a leading global cause of child morbidity and mortality and responsible for more than 2 million deaths annually before the increase in global measles vaccine coverage in the 1980s<sup>(6)</sup>. To reach the goals set out in the Global Vaccine Action Plan, which include elimination of measles by 2020 in five out of six regions of the World Health Organization<sup>(7)</sup>. For public safety, two doses of measles vaccine across all age groups from 9 months up to 15 years of age is recommended by the World Health Organization<sup>(8)</sup>. In a study conducted in a community with very low immunization coverage in the Netherlands 1999-2000, the results show measles epidemic in the Netherlands started with an outbreak in an orthodox reformed elementary school with 7% vaccine coverage. By May 2000, 3292 cases of measles were reported to the national registry, including three measles-related deaths and 72 hospitalizations. The overall attack rate was 37%<sup>(9)</sup>. In Afghanistan, among the 25,000 reported cases in 2017, 85% were among children under the age of 10. The measles vaccine will be administered free of charge in all mosques, villages and health facilities throughout the country, targeting all

children under the age of 10,<sup>(10)</sup>. And it was the second major cause of outbreak in the country during the year of 2018. This is due to low vaccination coverage against measles. Prevention and control measures taken for measles cases reduction in Afghanistan are:

- Vaccination two dose of measles vaccine in the routine vaccination program and measles mortality reduction campaign in case of outbreak.
- Proper case management for measles cases including provision of vitamin A supplement, antibiotic if needed, and supportive care to prevent complications.
- Disease surveillance was also one of the main interventions in reduction of measles cases through early detection, investigation and response to the measles outbreaks and coordination for the measles mortality reduction campaigns<sup>(11)</sup>.

This study was aimed to describe the cases in terms of Time, Place and Persons as well as to estimate the attack rate, Case Fatality Rate (CFR) and vaccine efficacy as new information about the outbreak.

## Objectives:

- To analyse the measles data of Kabul province from surveillance department during 2018.
- To characterize measles outbreaks by person, place and time to identify the Case Fatality Rate (CFR) and Attack Rate (AR) of measles in Kabul.
- To address the gap and provide recommendations to avoid similar outbreaks in the future.

## Material and Methods:

### Study Design and Data Source:

For this study the retrospective data of measles outbreak was conducted. Data was collected through national Disease surveillance department.

Disease surveillance as an active surveillance, has been functioning effectively since December 2006 as a sentinel site-based surveillance system, with both indicators-based surveillance (IBS) and Event Based Surveillance (EBS) component. In IBS, the weekly reporting of 16 priority disease/event (Mortality Morbidity) from public and few private health facilities is included. In EBS the reporting of unusual events and suspected outbreak (of any disease) is included, up to 31/12/2016 the disease surveillance established 643 surveillance sentinel sites all over the country (543 is health facilities and 100 in the community)<sup>(11)</sup>. The central DEWS database is located at the Ministry of Public Health central office in Kabul.

#### **Study population and Sampling:**

Includes districts of Shakardara, Dih sabz, Chahar asiab and other different areas that were referred to Indra gandi national hospital. These areas were affected by the outbreak. The overall population according to Central Statistics Office(CSO) was 4034531 and our sample contained 400 cases of measles. The cases were included different age category: <5 years from 826350 populations were 280 (70%), and >5 years from 3208181 populations were 119(30%) that were used for the analysis in Kabul in 2018.

**Study Area:** Kabul province

**Study Period:** 2018

#### **Data Collection Method:**

We used a standard line list that prepared by World Health Organization (WHO) for outbreak investigation.

#### **Data Management and Analysis:**

The collected information was managed and analyzed using Excel and Epi info 7 were used.

#### **Case definition:**

Confirmed case: Suspected case with positive serum IgM and no measles vaccination in prior 28 days.

#### **Response team:**

Health management Information system of ministry of public health as a passive surveillance received the data of mortality and morbidity including measles from all the public health facility throughout the country. Disease surveillance as an active surveillance has been functioning effectively since December 2006 as a sentinel site-based surveillance system, with both indicators-based surveillance (IBS) and Event Based Surveillance (EBS) component<sup>(12)</sup>.

#### **Results:**

There were 215 outbreaks of measles reported and investigated in 2018 in Afghanistan, out of which four outbreaks were reported in Kabul province. these outbreaks contained 400 cases (50% female) of them 172 (43%) cases were confirmed, 20 (5%) probable and 208 (52%) suspected. Totally 269 (67%) were hospitalized and 2 deaths were reported in the Dihsabz district. Most of the cases are unvaccinated or incompletely vaccinated. The districts of Shakardara, Dih sabz, Chahar asiab and other different areas which are referred to Indra gandi national hospital, were areas affected by the outbreak. likewise, in the Dihsabz district the village of Bakhtaran, child deaths due to measles were also reported (1 male & 1 female). The mean age was 3.8 years, standard deviation was 4.55 year and the median was 2 years with a range of <0 to 39 years. The male to female ratio was about 1.01:0.99. Overall, 257 (64%) cases received zero dose of measles vaccination while 143 (36%) were vaccinated against measles 44 (31%) got the first dose and 99 (69%) got the second dose, but were still affected by the measles. The vaccination coverage was 15% in Chahar- Asiab, 0% in Deh-Sabz and 67 % in Shakar-Dara districts.

Case Fatality Rate (CFR) was 4.3%. Majority of cases were 280 (70 %) among age group 0-4 years and the overall attack rate was 59/100000 population. Over all 395(98.75%) include (49.87% male and 50% female) become cured and from them 357(89%) received vitamin A.

**Table 1:** Age and gender distribution cases during measles outbreak (n=400)

Age group (years)	Male cases (%)	Females cases (%)
0-4 year	145(36%)	135(34%)
5-9 year	35(9%)	38(10%)
10-14 year	16(4%)	18(4.5%)
15-19 year	5(1%)	3(0.75%)
20-24 year	0	3(0.75%)
25-29 year	0	1(0.25%)
30-34 year	0	0
35-39 year	0	1(0.25%)
Total	201(50%)	199(49.87%)

**Interpretation:** The major numbers of measles cases were reported among 0-4 years' age group (145 male vs 135 female).

**Table 2:** Distribution of cases of being vaccinated and getting sick

Vaccine doses	Number of measles + cases	%
First dose	44	31
Second dose	99	69

**Interpretation:** Out of overall 400 cases 143 cases were vaccinated against measles but still had measles.

**Table 3:** Age specific attack rate during measles outbreak in Kabul, 2018

Age groups (years)	Total no. of cases in the age group	Total population of the same age group by CSO	Age specific attack rate $a/(a+b)*100000$
0-4 year	280	826350	34
5-9 year	73	777741	9
10-14 year	34	680523	5
15-19 year	8	534697	1.49
20-24 year	3	437479	0.68
25-29 year	1	340262	0.29
30-34 year	0	243044	0
35-39 year	1	194435	0.51
Total	400	4034531	59

**Interpretation:** The measles cases were reported mostly among the children and maximum number **280**(70 %) of the measles cases were reported in the 0-4 years' age group with Attack Rate 34/100,000 of population followed by 5-9 year of age group (**n=73**) 9/100000. The cumulative incidence of infection (overall attack rate was **59/100,000** population). 269(132 Male and 137 Female) were hospitalized. The major number of hospitalized cases were with the children 0-4 year and 2 deaths were reported.

**Table 4:** Case fatality rate in measles outbreak in Kabul, 2018

Age groups	Total no. of deaths	Total no. of cases	CFR%
0-4 year	0	280	0
5-9 year	1	73	1.36
10-14 year	1	34	2.94
15-19 year	0	8	0
20-24 year	0	3	0
25-29 year	0	1	0
30-34 year	0	0	0
35-39 year	0	1	0

**Interpretation:** the major cases of measles were reported among the children 0-4 years and 2 deaths were reported among the age groups of 5-9 years and 10-14 year.

#### Transmission:

Measles virus travels through the air. You can catch measles from an infected person as early as 4 days before they have a rash and for up to 4 days after the rash appears. The virus remains active and contagious in the air or on infected surfaces. Contact investigations were conducted for all cases. 251 cases had contact with similar cases within 7-14 days and out of them 20 patients were hospitalized and the remaining cases had other contact. The number of male contacts was 29 and female contacts were 35.

#### Immunization:

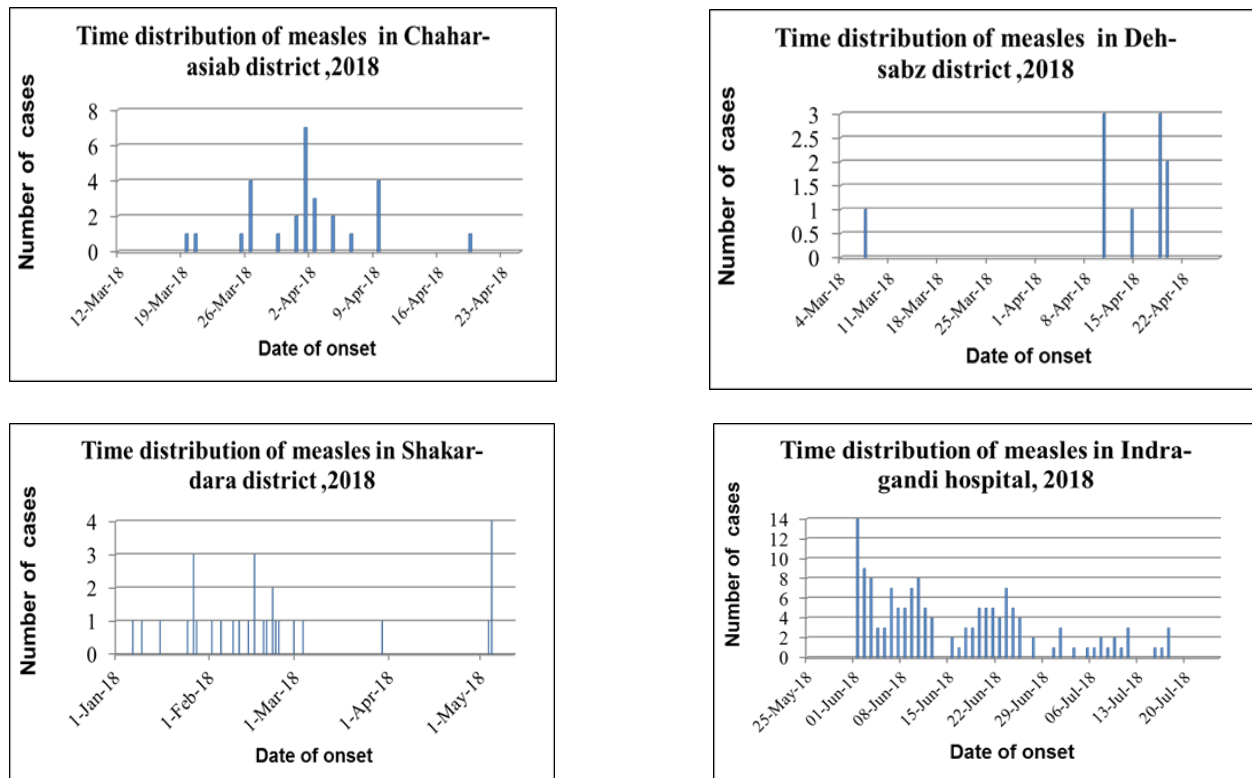
Overall all among 400 cases 257(64%) were with zero dose of measles vaccination while 44(31%)

received 1st dose and 99(69%) received both doses. The vaccination coverage was 15% in Chahar-Asiab, 0% in Deh- Sabz and 67 % in Shakar-Dara districts.

#### Vitamin A Supplementation:

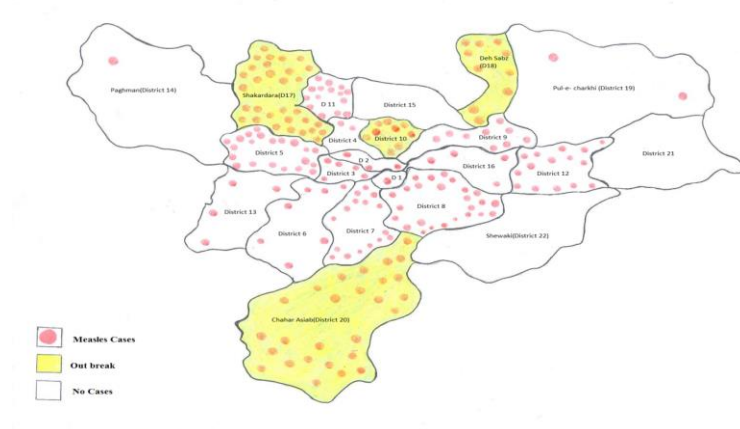
Vitamin A supplements have been shown to reduce the number of deaths from measles by 50%. WHO recommends routine measles vaccination for children, combined with mass immunization campaigns in Afghanistan; these are key public health strategies to reduce measles deaths. The measles vaccine has been in use for over 40 years, it is safe and effective <sup>(8)</sup>. Out of 400 395(98.75%) (49.87% male and 50% female) were cured and 357(89%) of them received vit A. There were 172 confirmed and total 2018 suspected Measles cases (n=208). Of the patients with confirmed measles, 75(44%) were unvaccinated, and 87(51%) were under the age of vaccination.

**Figure 1: Time trend of measles cases on Kabul province, 2018**



**Interpretation:** The outbreak period was defined as a 14-day incubation period before the index patient's rash onset through 1 incubation

**Figure 2:** Measles outbreak by district level in Kabul province, 2018.



**Interpretation:** The measles outbreak initially affected the villages of Bakhtyaran on Dih sabz district, Qalach on Shakardara district, Qalae-zaman khil on chahar asiab district and indragandi hospital where all people are referred to. Likewise, in the Dihsabz district the village of Bakhtaran child death due to measles were also reported (1 male & 1 female).

## Discussion

The World Health Organization estimated that measles infects 30 million persons and causes 454,000 deaths annually worldwide<sup>(1)</sup>. In a study was conducted in a community with very low immunization coverage in the Netherlands, the results show measles epidemic in the Netherlands started with an outbreak in an orthodox reformed elementary school with 7% vaccine coverage. By May 2000, 3292 cases of measles were reported to the national registry, including three measles-related deaths and 72 hospitalizations and the overall attack rate was 37%<sup>(9)</sup>. The Global Vaccine Action Plan was endorsed by the World Health Assembly in 2012 and is a commitment to ensure that no one misses out on vital immunization by 2020. Measles was a leading global cause

period after the last patient's rash onset. Patients were considered infectious from 5 days before to 5 days after rash onset.

of child morbidity and mortality and responsible for more than 2 million deaths annually before the

increase in global measles vaccine coverage in the 1980s<sup>(6)</sup>. In Afghanistan measles remain the 2<sup>nd</sup> main cause of the outbreak and the main reason for which is the low vaccination coverage against measles, as measles is fully preventable by a proven safe vaccination. For public safety, two doses of measles vaccine across all age groups from 9 months up to 15 years of age is recommended by the World Health Organization (WHO)<sup>(10)</sup>. The Afghanistan De-

mographic Health Survey of 2015 estimates that only 60% of eligible Afghan children receive their first dose of measles vaccine every year while less than 40% receive the second dose<sup>(11)</sup>. In 2018, 113 numbers of children, under one-years-old, were vaccinated against measles, two of the 400 measles cases in Kabul were fatal. Measles outbreaks affected rural districts Kabul province due to low immunization coverage. So we can estimate that immunization and poor public health service coverage contribute to the spread of Measles.

## Study Limitations:

- Not representative of entire population because there might be some cases who weren't referring to hospital.
- Under reporting of cases.

## Conclusion:

Measles is a leading global cause of child morbidity and mortality and responsible for more than 2 million deaths annually before the increase in global measles vaccine coverage, also low immunization and poor public health service coverage contribute to the spread of Measles and immunization program can decrease measles cases and outbreak in a community. Immunization is

the right of every child, we must accelerate our efforts to ensure all children in Kabul are vaccinated and protected from preventable diseases. Two doses of the vaccine are recommended to ensure immunity, as about 11% of vaccinated children fail to develop immunity from the first dose. Afghanistan had committed to eliminate measles by the end of 2015. To help achieve that goal, the Ministry of Public Health, with the support of WHO is preparing to train health workers for the second phase of the measles vaccination campaign. As a result, more than 395 patients were treated by the medical emergency teams. This outbreak confirms that the overall immunization coverage remains low. where the lack of access to immediate treatment can lead to high mortality rates. It has mainly affected unvaccinated children aged 0-14 years. Since the case fatality rate is higher in ages of 5-15 years, hence, we hypothesize that this age group is at more risk and need to be focused. although 25% of the cases were vaccinated against measles but why they are still affected by measles, requires more investigation.

### **Recommendations:**

As Immunization has been proven as one of the most cost-effective and lifesaving interventions against fatal childhood diseases like measles Following recommendation should be representing:

- Afghanistan's routine immunisation must be a top priority to secure further reductions in mortality from vaccine-preventable disease.
- Ministry of public health should focus on feasible strategies to improve immunization coverage in Kabul province.
- Strengthening the surveillance system for measles data management and quality.
- Conduct Health Education campaign in affected areas to improve the community awareness about measles prognosis and importance of measles vaccine.
- Children less than 5 years are required to complete two doses of measles vaccine in affected districts.
- Vaccination of all infants at the age of 6 months in affected districts.
- Ministry of public health should focus on areas in which outbreaks occur and should find its root causes to eliminate the disease.

### **Acknowledgement:**

I would like to express my gratitude to my respected Mentors for their gaudiness and hard working with me and measles data national disease surveillance report (NDSR) department colleague Dr. Allah Mohammed Noori, Kabul NDSR for their assistance who enriched this paper by their contribution and providing invaluable and helpful comments.

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### **Peer Review Process**

After submission, the article will be reviewed by the editor and statistician to review methodology and general presentation of the research according to GMJ criteria. A code will be assigned to all articles and the future correspondence will be by code number. The articles are sent to two external reviewers (peers) and the comments are exchanged between authors and reviewers. On satisfactory response, the articles are shared with the editorial board and on compliance with the Journal's instruction and editorial board's comments the editor finally decides the publication.

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The manuscript will be in compliance with the guidelines of Council for International Organizations of Medical Science (COIMS) and Helsinki declaration. The editor reserves the right to reject the articles on ethical grounds. The report for randomized control trials (RCTs) should be according to CONSORT statement. All RCTs should be registered at an international RCT centers.

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The title should describe the article's content clearly and precisely, and allow the reader to decide whether it would be appropriate to consult the article further. Unnecessary words such as 'A study of', 'Investigations of', 'Observations on', etc. should be omitted. It should not have abbreviations and jargon.

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  2. Drafting the article or revising it critically for important intellectual content; and
  3. Final approval of the version to be published and publicly take responsibility for the data and conclusions
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It should briefly describe the problem being addressed in the study, how the study was performed, the salient result and what the authors conclude from the results. Structure of abstract should be in accordance to the article type. A structured abstract should not be more than 250 words for original article. The structured abstract should consist four paragraphs, under the headings: Objective, Methods, Results and Conclusion. If reporting quantitative data, results should mention key frequencies, percentages and findings. Abstracts should be followed by 3-10 MeSH words (key-words). Details available from the Medical Subject Headings (MeSH) list of index medicus. For assistance see: <http://www.ncbi.nlm.nih.gov/mesh>

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The introduction should be brief, ideally 2-3 paragraphs long. It should clearly state the problem being investigated, the background that explains the problem, and the reasons for conducting the research. It should summarize relevant research to provide context, state how the authors' work differs from published work and importantly what questions the article answer. Briefly describe your experiment, hypothesis, research question(s), and general experimental design or method.

## **Methods**

The main purpose of this section is to provide the reader enough details so they can replicate the research. It should explain how the problem was studied, identify the procedures the author followed, and order these chronologically where possible. The methods identify the equipment and describe materials used and specify the source if there is variation in quality of materials. It should also include the frequency of observations, what types of data were recorded. It should also name any statistical tests used so that the numerical results can be validated. It is advisable to use the past tense, and avoid using the first person. This section should be no more than 2 pages.

## **Results**

Results should objectively present the findings, and explain in words what was found. This section shows that new results are contributing to the body of scientific knowledge, so it is important to be clear and lay them out in a logical sequence. The data should be analyzed and presented in the form of figures (graphs), tables, and/or description of observations. It is important to clearly identify for the reader any significant trends. The results section should follow a logical sequence based on the table and figures that best presents the findings that answer the question or hypothesis being investigated. Tables and figures are assigned numbers separately, and should be in the sequence that the author refers to them in the text. Figures should have a brief description (a legend), providing the reader sufficient information to know how the data were produced. It is important not to interpret the results - this should be done in the discussion section. It should not have more than 2-3 tables and 2 graphs.

## **Discussion**

In this section, the author should describe what his/her results mean, specifically in the context of what was already known about the subject of the investigation. The author should link back to the introduction by way of the question(s) or hypotheses posed. Author should indicate how the results relate to expectations and to the literature previously cited, whether they support or contradict previous theories. Most significantly, the discussion should explain how the research has moved the body of scientific knowledge forward. It is important not to extend conclusions beyond what is directly supported by the author's results, so avoid undue speculation. It is advisable to suggest practical applications of results, and outline what would be the next steps in the study. The author should also discuss the strengths and weaknesses in relation to other studies.

In short the discussion should at least talk about:

- statement of principal findings
- strengths and weaknesses of the study
- strengths and weaknesses in relation to other studies

## **Conclusion**

The paper should end with strong and clear conclusion. It should be like a "thunderbolt in reverse": it begins with thunder (introduction) and ends with lightning (conclusion). Conclusion should be linked with the goals of the study, and should be limited to the boundaries of the study. Authors should avoid unqualified statements and conclusion not completely supported by the data. For example, they should not make statements on economic benefits and costs unless their manuscript includes economic data and analysis. Authors should refrain from claiming unjustified priority about the findings. It should be noted that a negative finding could be as important as a positive finding.

In short the conclusion should at least talk about:

- Meaning of the study, possible mechanisms and implications for clinicians and policymakers
- Unanswered questions and future research conclusion.

## **Acknowledgment**

This section should be brief and include the names of individuals who have assisted with the study, including, contributors, suppliers who may have provided materials free of charge, etc. Authors should also

disclose in their article any financial or other substantive conflict of interest that might be construed to influence the results or interpretation of their article.

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Both the in-text citations and references for Ghanzanfar Medical Journal are in Harvard Style or Vancouver Style. All the materials should be cited in Harvard Style or Vancouver Style.

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Original article should be maximum 3,000 words excluding title page, a structured abstract of 250 words and references with no more than three tables or figures and 25 references

The manuscript must be written in American English. Non-native English speakers must seek the assistance of experienced, English-speaking medical editors if in doubt.

- Type the manuscript on A4 size (8.5x11 inches or 21.6x27 cm) white bond paper, with margins of at least 1.5 inches (4 cm).
- Type on one side of the paper, double spacing every page.
- Begin each section on separate page and in the following order: title page, abstract, introduction, materials/ subjects/ patients and methods, results, discussion, conclusion, acknowledgements, references, tables and figures with legends.
- Number pages consecutively in the upper right-hand corner of each page, beginning with the title page. Type the page number.
- Present decimal figures up to 2 decimals only. e.g. 0.07 is correct instead of 0.071.
- Sentences should be properly structured instead of giving brackets within a sentence. For example, the study participants (women of age group 25-30 years) were approached for the interviews. The correct way is 'The study participants included women of age group 25-30 years. They were approached for the interviews.'

Both the printed version (in A4 size, double space) and the soft copy should be submitted to the GMJ.

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آنها را طوری تربیه کنید که در نسل بعدی انطباق پذیر  
باشند، نه مثل شما!"**

پروفسور غضنفر