Knowledge, Attitude and Practice Survey on COVID-19 in Newly Merged Districts of Khyber Pakhthunkhwa Pakistan.

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Abstract

Background: Newly Merged Districts (NMDs) of erstwhile FATA Pakistan area has remained under protracted emergency of conflict and terrorism and has difficult terrain with hard to reach areas. Methods: We conducted KAP survey about COVID19 in five NMDs, aiming at assessing knowledge of population and establishing baseline for comparison. A total of 1227 respondents (376 adult males, 382 adult females, 236 adolescent boys and 233 adolescent girls) were interviewed in 150 locations over a period of five days. Data Instruments were pretested, and consent of respondents were taken. Multiple choice options were given to choose from; hence responses have been calculated. Results: Our results reveal that mean knowledge score was similar amongst adults and adolescents. However, adult males on average scored better than the adult females. Overall, 98 % of the study participants knew about COVID 19 and 92% participants acknowledged COVID- 19 as a preventable infection. Formal school education and belonging to district NWTD and SWTD (vs. the reference district Khyber) were significantly associated with higher knowledge score amongst both adults and adolescents. In addition, formal school education and adults belonging to district Kurram, Orakzai and SWTD (vs. the reference district Khyber) had greater odds of believing that COVID 19 is preventable. Conclusion: Our findings confirm that majority of respondents know about symptoms, spread, prevention, test and treatment related to COVID 19 which may be attributed to concurrent global, national and provincial information dissemination campaigns.

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Methods: We conducted KAP survey about COVID19 in five NMDs, aiming at assessing knowledge of population and establishing baseline for comparison. A total of 1227 respondents (376 adult males, 382 adult females, 236 adolescent boys and 233 adolescent girls) were interviewed in 150 locations over a period of five days. Data Instruments were pretested, and consent of respondents were taken. Multiple choice options were given to choose from; hence responses have been calculated.

Results: Our results reveal that mean knowledge score was similar amongst adults and adolescents. However, adult males on average scored better than the adult females. Overall, 98 % of the study participants knew about COVID 19 and 92% participants acknowledged COVID- 19 as a preventable infection. Formal school education and belonging to district NWTD and SWTD (vs. the reference district Khyber) were significantly associated with higher knowledge score amongst both adults and adolescents. In addition, formal school education and adults belonging to district Kurram, Orakzai and SWTD (vs. the reference district Khyber) had greater odds of believing that COVID 19 is preventable.

Conclusion: Our findings confirm that majority of respondents know about symptoms, spread, prevention, test and treatment related to COVID 19 which may be attributed to concurrent global, national and provincial information dissemination campaigns.

Keywords: COVID 19, pandemic, Influenza, KAP, Pakistan, South Asia, knowledge

Background:

In December 2019, a series of pneumonia cases of unknown cause were detected in Wuhan City, Hubei Province of China. The pathogen identified was named as novel coronavirus (2019-nCoV), currently called, severe acute respiratory syndrome corona virus-2 (SARS-CoV-2), an enveloped and single stranded RNA virus [4] which has phylogenetic resemblance to SARS-COV-1 [5]. COVID-19 is the name that has been given to a new severe acute respiratory syndrome caused by coronavirus 2 (SARS-CoV-2). The disease was notified to the World Health Organization (WHO) on December 31, 2019 [1] and it was declared as public health emergency of international concern (PHEIC) by WHO on January 30, 2020. Due to the rapid spread of the virus, the severity of illness and reported fatalities, COVID-19 was further labelled as a global pandemic on March 11, 2020 [2]. By June 2020 COVID-19 has spread to over 210 countries and territories, caused 6,313,662 laboratory confirmed cases and 376,282 deaths [3]. Till date (June 2020), no medicine has demonstrated efficacy in preventing, treating or curing COVID-19.

Pakistan's first COVID-19 case was reported on 26 February 2020 [7]. As of June 9, 2020, Pakistan has 108,317 laboratory confirmed cases and 2,172 COVID-19 associated deaths. Punjab (n=40,815) has highest number of cases followed by Sindh (n=39,555), Khyber Pakhtunkhwa KP (n=14,006), Baluchistan (n=6,788), Gilgit Baltistan (952), Islamabad (n=5,785) and Azad Jammu Kashmir (n=412) [8]. First systematic response emerged on March 13, when the government convened an emergency meeting of the National Security Committee, an apex civil-military coordination body, and made the decisions to seal the border with Iran, prohibit large-scale public gatherings, institute social distancing to limit infections, and close down educational institutions across the country. The COVID-19 Pakistan Preparedness and Response Plan (PPRP), prepared with the support of the UN and is guided by the WHO Strategic Preparedness and Response Plan (SPRP) [9], outlines the international assistance required by the Government of Pakistan (GoP) to stop the transmission of the pandemic and respond to the emerging public health needs in Pakistan. It is

Accordingly, the Government of the province Khyber Pakhtunkhwa (KPK) has taken all the necessary actions to cope with the situation of COVID-19 in the province [10]. Communication campaign under the title 'RCCE' (Risk Communication and Community Engagement) is under implementation across the province and its review reveals that false public perception due to easing of lockdown by Government has

resulted in escalation of COVID-19 cases in Pakistan that needs to be addressed through a nationwide enforcement intervention to increase compliance with COVID-19 preventative actions [11].

Ex FATA, now known as Newly Merged Districts (NMDs) is the poorest region of Pakistan. 73% of its 5 million population lives in poverty compared to a national average of 39% [12]. Adult literacy stands at 28% (8% for women) compared to a national average of 57% (43% for women) [13]. One million, out of 1.8 million children (aged 5-16), are out of school. Many families do not send their girls to school, particularly as they reach puberty. Livelihoods and economic opportunities are limited. Many people live in barren, dry, mountainous areas vulnerable to climate change. Only 10% of land is fertile and only 7% currently suitable for farming [14].

This area is inaccessible for online and digital surveys due to security and logistical reasons [18]. Therefore, to tailor the response for this isolated area, this face to face survey was direly needed to assess their knowledge and perceptions regarding the COVID 19 pandemic. Fortunately, Khyber Pakhtunkhwa Merged Districts (KPMD) Support Program is implementing outreach activities under DFID support and the staff and resources being well positioned were utilized for the survey. This survey aimed at assessing the knowledge of residents of Newly merged districts, NMDs, about COVID-19.

Methods

Sampling technique

A total of 1,227 respondents were interviewed. The sample size enabled us to determine the proportion of respondents with correct answers with a margin of error of ±3.

A cross sectional survey was conducted using multistage random sampling. In stage 1, five out of the seven NMDs were selected; namely Khyber, Kurram, Orakzai, North Waziristan and South Waziristan. In stage 2, three subdivisions were selected in each district followed by selection of two populous hubs of more than 15,000 population in each subdivision during stage 3. In stage 4, five villages were selected in each populous hub. Respondents were selected from those coming to outreach session. The selection is best illustrated in **Figure 1** .

Data collection:

Sixty (30 male and 30 female) Health Hygiene Promoters of Department of Health were engaged to collect data using a structured questionnaire. The health promoters were already trained on Covid-19 and were experienced social mobilizers with the equivalent qualification. Orientation was provided on the questionnaire and data collection on April 16, 2020. The health promoters were facilitated by 30 team leaders for logistical and operational needs. Five district managers supervised data collection in the field while the data entry was supervised by the district Management Information System (MIS) assistant.

The questionnaire was designed to capture data on demographics (age, gender, education, address of respondents), the knowledge (symptoms, test, prevention, mode of spread, management and source of information) and attitude (preventable or not) related to the COVID19. Field demonstration was arranged, questionnaire was field tested on 17th April and fine-tuned.

A total of 30 teams were deployed for field data collection. Each team comprised a team leader, one male interviewer and one female interviewer. Teams were provided with appropriate personal protective equipment (PPE) including face masks, hand sanitizers and gloves for the field days. Masks were also provided for the respondents and it was ensured that teams observe social distancing measures during interviews.

Each team had to conduct 8 face to face interviews per day in 30 different settlements. On average, 240 interviews were completed per day; men and boys were interviewed by male interviewers whereas being a conservative society, women and girls were interviewed by female interviewers. In each category, first and fourth client coming to outreach session were chosen for interview. As such, a total of 1,227 interviews were completed in five days in 150 hamlets of five districts. Consent form was signed by each respondent before start of the interview.

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Data entry was done daily by MIS assistant in each district. Both hard and soft copies were then transferred to provincial office of Director Health Services NMDs where provincial data analyst conducted 10 % quality check on the entries.

Ethical considerations:

Request was submitted to DHS NMDs for the permission to conduct this survey using the paraphernalia of the department. Study protocol was submitted with the request which was examined by the authorities of the department and permission was granted. Study protocol and questionnaire were shared with group of provincial and district managers and consent form, questionnaire and spreadsheet were finalized after taking their views into consideration. Ethical and administrative permission was obtained (ref: 10/DHS/MA/KPMD). All participants provided written informed consent.

Statistical analysis

Data were analyzed using STATA 15. Continuous variables are presented as Mean (SD) while categorical variables as Percentages and numbers. Frequencies of correct knowledge, attitudes and practices answers were described. Total Knowledge scores were classified by demographic characteristics and compared using independent-samples t test and one-way analysis of variance (ANOVA) as appropriate. Multiple linear regression analysis was conducted using all demographic variables as predictors and knowledge score as the outcome to identify factors associated with knowledge. Binary logistic regression analyses were used to identify demographic factors associated with attitude towards the preventable nature of the disease. Unstandardized regression coefficients with standard error, β (SE), and odds ratios along with their 95% confidence intervals, OR (95%CI) were used to quantify the associations between predictors and the outcomes. The statistical significance level was set at $p < 0.05$ (two-sided).

Results

A total of 1227 participants (including 758 adults and 469 adolescents) completed the survey questionnaire. Among this sample, the average age was 34(12) years and 15(2) years for adults and adolescents respectively. There was almost an equal proportion of males and females (adults: [376 male and 382 females]; adolescents: [233 boys and 236 girls]). Similarly, a comparable number of adults and adolescents participated in the survey from each of the 5 districts (**Table 1**).

Comparison of Mean Knowledge score by demographic characteristics of participants are presented in **Table 1** . Overall there was no significant difference in Mean score between adults and adolescents (13.78 (4.00), 13.55 (3.72) respectively, p = 0.3). Comparisons within the subgroups of adults showed that the Mean score of males 14.42 (3.89) was significantly higher than that of the females 13.16 (4.00) p <0.001. Adult participants with any formal education had more knowledge compared to those who had no formal education 14.92 (3.84) and 13.04 (3.93) respectively, p <0.001. In contrast, both male and female adolescents had similar mean knowledge score (p=0.06). However, adolescents who had any formal education had significantly better knowledge score than the counterparts (p<0.001).

A one way between groups ANOVA was performed to compare the impact of 'district of residence' on 'Mean Knowledge score' (**Table 1**). Participants were divided into 5 groups according to the district where the participants lived. There was statistically significant difference in the knowledge score amongst the districts in both adults (p<0.001) and adolescents (p=0.001). The magnitude of the difference in the mean score was, however, small. Amongst adults, post hoc comparisons using the Tukey HSD test indicated that the mean score for districts NWTD 15.08 (3.26) and SWTD 15.03 (3.64) were not statistically different from each other, though, these were significantly higher than the mean score of districts Khyber 13.03 (3.46) Kurram 12.36 (4.59) and Orakzai 13.67 (4.18). The mean scores of districts Khyber, Kurram and Orakzai were alike. Amongst adolescents, participants from district NWTD had significantly higher score 13.86 (3.64) compared

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to all other 4 districts, which had similar scores 12.73 (3.05), 13.05 (4.68), 13 (3.78), 13.86 (3.64) for district Khyber, Kurram, Orakzai and SWTD respectively.

Table 2, 3 and 4 present the gender stratified response of participants (adults and adolescents) for various questions used for assessing the knowledge for COVID 19. Overall, 98 % of the study participants knew about COVID 19. Most of the adult and adolescent participants identified fever (63%) and cough (65%) as the symptoms of COVID 19 (**Table 2**). Another 44% of participants identified sore throat while headache and difficulty in breathing was identified by 32% and 25% of the participants, respectively. Around 8% of participants knew about other symptoms, like gastrointestinal tract symptoms, loss of taste and loss of smell. On average around 71% of the total participants recognized handshake as a mode of transmission (**Table 2**) of COVID19 while the proportion of participants who knew about cough, air borne transmission and overcrowding were 49%, 30% and 18% respectively. When asked about the treatment options for COVID 19, 68% opted for consulting a doctor, 26% for self-cure, 23% for home remedies while 7% for spiritual healers. Around 7% of participants did not know about the treatment (**Table 3**). Typically, 92% participants acknowledged COVID 19 as a preventable infection while 8% thought otherwise. Of those who knew it is preventable, 64% identified hand washing as a method for preventing the infection, 57% identified home stay whereas social distancing and avoiding handshake was identified by 37% of participants as an approach for preventing COVID 19. Approximately, 14% were of view that eating healthy can prevent the infection (**Table 3**). 79% respondents knew that test is available for its diagnosis. Among those who knew, 55% were adults and 45% adolescents, 51% males and 49% females. Amongst both adults and adolescents, main source of information was radio (54%). The proportion of participants who recognized television, health workers, relatives, social media and newspaper as sources of information about COVID 19 were 30%, 29%, 26%, 18% and 7% respectively. Only 4% referred to displayed material (**Table 4**). Knowledge of participants significantly differed across genders amongst both adults and adolescents (**Tables 2, 3 and 4**).

Multiple linear regression analysis, adjusted for demographic variables with Knowledge score as the outcome (**Table 5**), showed that age (β[ΣΕ]: 0.03[0.01], Π=0.001), φορμαλ σςηοολ εδυςατιον (ς. νο εδυςατιον, β[ΣΕ]: 1.90[0.27], Π<0.001) ανδ βελονγινγ το διστριςτ ΝΩΤΔ ανδ ΣΩΤΔ (ς. τηε ρεφερενςε διστριςτ Κηψβερ β[ΣΕ]: 2.00 [0.42], π<0.001 ανδ 2.13 [0.42], π<0.001, ρεσπεςτιελψ), ωερε σιγνιφιςαντλψ ασσοςιατεδ ωιτη ηιγηερ κνοω- λεδγε σςορε. Σιμιλαρ ρεσυλτς ωερε οβταινεδ αμονγστ βοτη αδυλτς ανδ αδολεσςεντς. Ηοωεερ, τηε ρελατιονσημπ βετωεεν αγε ανδ κνοωλεδγε σςορε ωας νοτ σιγνιφιςαντ ιν αδυλτς αφτερ αδθυστινγ φορ οτηερ δεμογραπηις αριαβλες (**Ταβλε 5**).

Μυλτιπλε λογιστις ρεγρεσσιον αναλψσις (**Ταβλε 6**) φουνδ τηατ φεμαλε γενδερ (ς. μαλε, ΟΡ[95% ῙΙ]: 0.43[0.25-0.73], ς = 0.002), φορμαλ σςηοολ εδυςατιον (ς. νο εδυςατιον, ΟΡ[95% ῙΙ]: 2.99[1.68-5.30],π<0.001), ανδ βελονγινγ το διστριςτ Κυρραμ, Οραχζαι ανδ ΣΩΤΔ (ς. τηε ρεφερενςε διστριςτ Κηψβερ, ΟΡ[95% ῙΙ]: 0.04[0.01-0.17, π<0.001· 0.08[0.02-0.36], π=0.001· 0.64[0.01-0.27], π<0.001, ρεσπεςτιελψ) ηαδ γρεατερ οδδς οφ βελιεινγ τηατ ῸΎΙΔ 19 ις πρεεενταβλε. Αναλψσις στρατιφιεδ φορ αδυλτς ανδ αδολεσςεντς σηοωεδ σιμιλαρ ρεσυλτς. Τηουγη, τηερε ωας νο σιγνιφιςαντ ασσοςιατιον βετωεεν τηε αττιτυδε ρεγαρδινγ τηε πρεεενταβλε νατυρε οφ ῸΎΙΔ 19 ανδ γενδερ ιν αδυλτς ανδ ωιτη πλαςε οφ ρεσιδενςε ιν αδολεσςεντς (**Ταβλε 6**).

Δισςυσσιον

Ουρ ρεσυλτς ρεεαλ τηατ μεαν κνοωλεδγε σςορε ωας σιμιλαρ αμονγστ αδυλτς ανδ αδολεσςεντς. Ηοωεερ, αδυλτ μαλες ον αεραγε σςορεδ βεττερ τηαν τηε αδυλτ φεμαλες. Οεραλλ, 98 % οφ τηε στυδψ παρτιςιπαντς κνεω αβουτ ῸΎΙΔ 19 ανδ 92% παρτιςιπαντς αςκνοωλεδγεδ ῸΎΙΔ- 19 ας α πρεεενταβλε ινφεςτιον. Φορμαλ σςηοολ εδυςατιον ανδ βελονγινγ το διστριςτ ΝΩΤΔ ανδ ΣΩΤΔ (ς. τηε ρεφερενςε διστριςτ Κηψβερ) ωερε σιγνιφιςαντλψ ασσοςιατεδ ωιτη ηιγηερ κνοωλεδγε σςορε αμονγστ βοτη αδυλτς ανδ αδολεσςεντς. Ιν αδδιτιον, φορμαλ σςηοολ εδυςατιον ανδ αδυλτς βελονγινγ το διστριςτ Κυρραμ, Οραχζαι ανδ ΣΩΤΔ (ς. τηε ρεφερενςε διστριςτ Κηψβερ) ηαδ γρεατερ οδδς οφ βελιεινγ τηατ ῸΎΙΔ 19 ις πρεεενταβλε.

Τηε ηιγηερ μεαν σςορε αμονγστ αδυλτ μαλες τηατ αδυλτ φεμαλες ιν ουρ στυδψ ςαν βε εξπλαινεδ βψ τηε φαςτ τηατ τηεσε διστριςτς αρε ςυλτυραλλψ ριγιδ ωιτη λιττλε οππορτυνιτψ φορ φεμαλες το ςομε ουτ. Τηεψ αλσο ηαε λιττλε οππορτυνιτιες φορ εδυςατιον ανδ ρεμαιν ςονφινεδ το ηομες. Οεραλλ, ηοωεερ, α ηιγη προπορτιον οφ

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παρτιςιπαντς ωας αωαρε οφ ῸΊΔ19 ανδ ρελατεδ ινφορματιον. Φινδινγ οφ σιμιλαρ ονλινε συρεψ ςονδυςτεδ ον σαμε τοπις ιν σαμε τιμε ζονε αρε συππορτιε οφ τηεσε φινδινγς, αλτηουγη τηοσε ρεσεαρςη στυδιες ρεαςηεδ το σεττλεδ ΚΠ ανδ νοτ ΝΜΔς δυε το ςοννεςτιτιψ ισσυες ανδ σεςυριτψ ρεασονς.

Ιπσος τραςκερ ανδ σναπ πολλ ςονδυςτεδ ιν Απριλ τηρουγη Ρανδομ Διγιτ Διαλερ (ΡΔΔ) ωιτη 1000 πλυς ιντεριεως ανδ 73% μαλες, φουνδ 93% ρεσπονδεντς αωαρε οφ ῸΊΔ19 (18). 12% ρεσπονδεντς οφ τηις συρεψ ωερε φρομ Κηψβερ Πακητυνκηωα. Σιμιλαρλψ, α ωεβ-βασεδ συρεψ ςονδυςτεδ βψ ΑΚΥ (ν= 403) ωιτη 30% ρεσπονδεντς φρομ Κηψβερ Πακητυνκηωα ανδ 41% μαλες, φουνδ 99.5 % αωαρενεσς (19).

Ονλινε συρεψ ςονδυςτεδ ιν Ηυβει, ἧινα ωιτη 6910 ρεσπονδεντς, φουνδ 90% ρεσπονδεντς ωιτη ςορρεςτ κνοωλεδγε οφ ωηιςη 66% ωερε ωομεν ανδ 64% ηαδ Βαςηλερ δεγρεε (20). Α ςροσς σεςτιοναλ συρεψ ςονδυςτεδ ιν Μαλαψσια ωιτη 4850 ρεσπονδεντς φουνδ 80.5% ρεσπονδεντς ωιτη ςορρεςτ κνοωλεδγε (21). Σιμιλαρλψ, α ποπυλατιον-βασεδ συρεψ οφ 8591 παρτιςιπαντς ςονδυςτεδ ιν Ιραν φουνδ 90% ρεσπονδεντς κνοωλεδγεαβλε (22).

Ουρ φινδινγς φυρτηερ ρεεαλεδ τηατ φορμαλ σςηοολ εδυςατιον ανδ βελονγινγ το παρτιςυλαρ διστριςτς μαψ ηαε α ποσιτιε ασσοςιατιον ωιτη κνοωλεδγε ανδ αττιτυδε ρελατεδ το ῸΊΔ 19. Τηεσε φινδινγς αρε ιν λινε ωιτη λιτεραςψ ρατες ανδ τηε εδυςατιοναλ οππορτυνιτιες ααιλαβλε ιν τηεσε διστριςτς [13]. Ανοτηερ ιμπορταντ φαςτορ, τηατ μαψ εξπλαιν τηε λοωερ κνοωλεδγε αμονγστ σομε διστριςτς, ις τηε προτραςτεδ εμεργενςψ τηατ αφφεςτεδ τηεσε διστριςτς ιντενσελψ ανδ φορ λονγερ περιοδ. Μοστ ποπυλατιον ρεμαινεδ δισπλαςεδ (ΤΔΠς) δυε το ςονφλιςτ σιτυατιον.

Τωο τηιρδ οφ τηε ρεσπονδεντς κνεω αβουτ σψμπτομς οφ φεερ ανδ ςουγη, ανδ ηανδσηακε ας μαθορ ρεασον φορ σπρεαδ οφ δισεασε. Τηρεε φουρτη ρεσπονδεντς αγρεεδ το ςονσυλτ δοςτορς φορ σιςκνεσς. Νεαρλψ αλλ ρεσπονδεντς τερμεδ ιτ πρεεντιαβλε ουτ οφ ωηιςη τωο τηιρδ ιδεντιφιεδ ηανδ ωαση ανδ ηομε σταψ ας μεανς φορ πρεεντιον. Φουρ ουτ οφ φιε ρεσπονδεντς κνεω αβουτ τεστ το διαγνοσε τηε δισεασε.

Τηεσε φινδινγς συππορτ τηε τηεορψ οφ ςονςυρρεντ μυλτισουρςε ινφορματιον δισσεμινατιον φορ α γλοβαλ παν-δεμις. Τηρουγη Γοερνμεντ οφ Πακισταν ανδ Γοερνμεντ οφ Κηψβερ Πακητυνκηωα λαυνςηεδ Ρισκ ὄμμυνιςατιον ανδ ὄμμυνιτψ Ενγαγεμεντ (Ῥ῀῀Ε) ερψ εαρλψ βυτ γλοβαλ μεδια πλαψεδ μυςη ρολε ιν σπρεαδινγ τηε κνοωλεδγε ας ραδιο ανδ τελεισιον ωερε ιδεντιφιεδ μαθορ σουρςε οφ ινφορματιον. Τηις ωας φολλοωεδ βψ ρελατιες ανδ ηεαλτη ωορκερ. Δισπλαψεδ ματεριαλ ωας τηε λεαστ ιδεντιφιεδ σουρςε.

Στρενγτης ανδ λιμιτατιονς:

Τηε οεραλλ συππορτ οφ Δεπαρτμεντ οφ Ηεαλτη ΝΜΔς τηρουγη οωνερσηιπ, υσινγ τηειρ φιελδ ωορκερς φορ δατα ςολλεςτιον ανδ υσινγ τηειρ ΜΙΣ σταφφ φορ δατα εντρψ, ηας μαδε τηις εφφορτ συςςεσσφυλ. Δατα ηας βεεν ςολλεςτεδ διρεςτλψ φρομ τηε ρεσπονδεντ ωιτη τηειρ ςονσεντ. Τηε μυλτισταγε σαμπλινγ ανδ φυρτηερ σεγρεγατιον οφ ρεσπονδεντς ινςλυδινγ μαλε ανδ φεμαλες υνδερ τηε αγε οφ 18, ις α στρενγτη οφ τηις συρεψ.

Ιν ιεω οφ τηε ερψ φεω συςςεσσφυλ ανδ δοςυμεντεδ αττεμπτς φορ διρεςτ ςονταςτ ωιτη ρεσιδεντς οφ τηεσε ηαρδ το ρεαςη ανδ ιναςςεσσιβλε αρεας το ασςερταιν στατυς οφ κνοωλεδγε αβουτ διφφερεντ ισσυες ανδ τηειρ ιεωποιντ, τηις συρεψ ςαρριες μυςη ωειγηταγε.

Συρεψ ωας νοτ ςονδυςτεδ ιν τηε τωο ρεμαινινγ ΝΜΔς οφ Μυημανδ ανδ Βαθουρ δυε το τηε νον-ααιλαβιλιτψ οφ ουτρεαςη φιελδ ωορκερς ατ τηοσε λοςατιονς.

ὅνςλυσιονς:

Ιν τηε ςοντεξτ οφ Νεωλψ Μεργεδ Διστριςτς οφ ερστωηιλε ΦΑΤΑ ωηιςη αρε ιναςςεσσιβλε σςαττερεδ ποπυλατιον ωιτη διφφιςυλτ τερραιν ανδ σοςιοςυλτυραλ ριγιδιτψ, τηις συρεψ φινδς ςομβινατιον οφ μασς μεδια ανδ ΙΠ῀ βψ φροντλινε ηεαλτη ωορκερ, μοστ συιταβλε φορ τηε αωαρενεσς ραισινγ οφ γενεραλ πυβλις. Πριντ ματεριαλ ανδ δισπλαψεδ ματεριαλ ηας λιττλε σςοπε ιν τηεσε ηαρδ το ρεαςη αρεας. Τηεσε ρεςομμενδατιονς μαψ βε ςονσιδερεδ ατ τηε τιμε οφ ρειεωινγ Ῥ῀῀Ε στρατεγψ. Τηε συρεψ μαψ βε ρεπεατεδ αφτερ α ρεασοναβλε περιοδ φορ τηε πυρποσε οφ ςομπαρισον. Αδδιτιοναλλψ, τηεσε φινδινγ ωιλλ προε ηελπφυλ ιν πλαννινγ ςομμυνιςατιον στρατεγψ φορ οτηερ πυβλις ηεαλτη ιντερεντιονς ιν τηεσε διστριςτς.

Αςκνοωλεδγεμεντ:

Της συρεϕ ωας ονλψ ποσσιβλε δυε το τηε τιμελψ ανδ σινςερε εϕϕορτς οϕ βοτη προινςιαλ ανδ διστριςτ τεαμς οϕ ΚΠΜΔ προθεςτ. Τηε αυτηορς αρε ηιγηλψ ινδεβτεδ ϕορ τηις υνπρεςεδεντεδ συππορτ. Αυτηορς αρε οβλιγεδ το Διρεςτορ Ηεαλτη Σερις̈ες ΝΜΔς ϕορ γραντινγ περμισσιον το ςονδυςτ τηε συρεϕ. Ως ωουλδ λικε το εξπρεσς δεεπεστ γρατιτυδε το Μρ. Ιναψατ Υλλαη Αϕριδι, Προινςιαλ δατα αναλψστ ϕορ ηις εϕϕορτς ιν ρεϕινινγ τηε χυεστιονναιρε, προιδινγ οριεντατιον το διστριςτ ΜΙΣ ασσισταντς ανδ ϕορ χυαλιτψ ςηεςκ ον τηε δατα σετ.

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Ταβλε 1. Δεμογραπηις ςηαραςτεριστιςς οφ παρτιςιπαντς ανδ ςομπαρισον οφ μεαν κνοωλεδγε σςορε αςροσς διφφερεντ δεμογραπηις ςατεγοριες.

Characteristic	Adults	Adults	Adults		Adolescents	Adolescents	Adolescents
	n(%)	Score [Mean (SD)]	p		n(%)	Score [Mean (SD)]	p
Age group							
Adults vs adolescents	758 (62%)	13.78 (4.00)			469 (38%)	13.55 (3.72)	0.3*
Gender							
Male	376 (49.6%)	14.42 (3.89)	>0.001		233 (49.6%)	13.88(3.55)	0.06
Female	382 (50.3%)	13.16 (4.00)			236 (50.3%)	13.23(3.86)	
Education							
No formal education	458 (60.4%)	13.04 (3.93)	>0.001		201 (42.9%)	12.81 (3.71)	>0.001
Any formal education	300 (39.6%)	14.92 (3.84)			268 (57.1%)	14.10 (3.63)	
**District of residence							
Khyber	171 (22.6%)	13.03 (3.46)	>0.001		69 (14.7%)	12.73 (3.05)	0.001
Kurram	161 (21.2%)	12.36 (4.59)			79 (16.9%)	13.05 (4.68)	
NWTD	141 (18.6%)	15.08 (3.26)			99 (21.1%)	14.77 (2.95)	
Orakzai	132 (17.4%)	13.67 (4.18)			108 (23.0%)	13 (3.78)	
SWTD	153 (20.2%)	15.03 (3.64)			114 (24.3%)	13.86 (3.64)	

\# p value is for comparison of mean score across different demographic categories.

*p value is for comparison of mean score between adults and adolescents.

** one way ANOVA was performed followed by post hoc Tukey HSD test.

Table 2. Gender stratified knowledge about symptoms and mode of transmission of COVID 19 amongst adults and adolescents.

Symptoms of Covid19	Overall	Adults	Adults		Adolescents	Adolescents	
		Male	Female	p	Male	Female	p
	1227	376	382		233	236	
fever	776(63%)	259 (68.9%)	229 (59.9%)	0.01	149 (63.9%)	139 (58.9%)	0.3
headache	396(32%)	109 (29.0%)	139 (36.4%)	0.03	71 (30.5%)	77 (32.6%)	0.6
cough	793(65%)	259 (68.9%)	234 (61.3%)	0.03	165 (70.8%)	135 (57.2%)	0.002
throat pain	546(44%)	173 (46.0%)	166 (43.5%)	0.5	101 (43.3%)	106 (44.5%)	0.7
difficulty in breathing	303(25%)	112 (29.8%)	76 (19.9%)	0.002	58 (24.9%)	57 (24.2%)	0.8
other	98(8%)	34 (9.0%)	28 (7.3%)	0.4	17 (7.3%)	19 (8.1%)	0.7
total score (mean [SD])	2.27 (1.01)	2.43 (1.03)	2.22 (1.11)	0.006	2.35 (.976)	2.18 (1.102)	0.09
Mode of transmission	**Mode of transmission**	**Mode of transmission**	**Mode of transmission**	**Mode of transmission**	**Mode of transmission**	**Mode of transmission**	**Mode of transmission**
handshake	877(71%)	292 (77.7%)	246 (64.4%)	<0.001	180 (77.3%)	159 (67.4%)	0.2
cough	602(49%)	199 (52.9%)	183 (47.9%)	0.2	104 (44.6%)	116 (49.2%)	0.3
air	363(30%)	105 (27.9%)	128 (33.5%)	0.09	57 (24.5%)	73 (30.9%)	0.1
congregation	226(18%)	92 (24.5%)	41 (10.7%)	<0.001	54 (23.2%)	39 (16.5%)	0.07
any other	84(7%)	31 (8.2%)	19 (5.0%)	0.07	18 (7.7%)	16 (6.8%)	0.7
don't know	38(3%)	2 (0.5%)	24 (6.3%)	<0.001	5 (2.1%)	7 (3.0%)	0.5
total score (mean [SD])	1.67 (0.81)	1.92 (0.77)	1.31 (0.56)	<0.001	1.794 (0.78)	1.737 (0.83)	0.4

Table 3. Gender stratified knowledge about treatment options, prevention strategies and availability of test for COVID 19 amongst adults and adolescents.

Treatment options	Overall	Adults	Adults	
		Male	Female	p
	1227	**376**	**382**	
consult doctor	829(68%)	279 (74.2%)	234 (61.3%)	<0.001
home remedies	278(23%)	80 (21.3%)	98 (25.7%)	0.1

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Treatment options	Overall	Adults	Adults	
spiritual leaders	87(7%)	34 (9.0%)	23 (6.0%)	0.1
self-cure	315(26%)	108 (28.7%)	95 (24.9%)	0.2
any other	81(7%)	27 (7.2%)	21 (5.5%)	0.3
don't know	54(4%)	9 (2.4%)	22 (5.8%)	0.02
total score (mean [SD])	1.33 (0.65)	1.42 (0.70)	1.29 (0.56)	0.004
Prevention options	**Prevention options**	**Prevention options**	**Prevention options**	**Prevention options**
Handwash	782(64%)	228 (60.6%)	258 (67.5%)	0.04
Homestay	700(57%)	248 (66.0%)	205 (53.7%)	0.001
Avoid handshake	449(37%)	156 (41.5%)	118 (30.9%)	0.002
Social distancing	457(37%)	170 (45.2%)	122 (31.9%)	<0.001
Good food	177(14%)	33 (8.8%)	79 (20.7%)	<0.001
Don't know	9(0.7%)	1 (0.3%)	5 (1.3%)	0.1
Other	48(4%)	24 (6.4%)	8 (2.1%)	0.003
total score (mean [SD])	2.07 (1.23)	2.22 (1.26)	2.01 (1.27)	0.02
Availability of test	**Availability of test**	**Availability of test**	**Availability of test**	**Availability of test**
Those who knew	79%	265(28%)	263(27.6%)	0.2

Table 4. Main source of information for COVID 19 amongst adults and adolescents.

Sources of info	Overall	Adults	Adults		Adolescents	Adolescents	
		Male	Female	p	Male	Female	p
	1227	**376**	**382**		**233**	**236**	
TV	371(30%)	131 (34.8%)	104 (27.2%)	0.02	86 (36.9%)	50 (21.2%)	<0.001
Radio	667(54%)	223 (59.3%)	216 (56.5%)	0.4	104 (44.6%)	124 (52.5%)	0.08
Newspaper	91(7%)	44 (11.7%)	25 (6.5%)	0.01	8 (3.4%)	14 (5.9%)	0.2
Social media	224(18%)	81 (21.5%)	65 (17.0%)	0.1	40 (17.2%)	38 (16.1%)	0.7
Health worker	361(29%)	133 (35.4%)	91 (23.8%)	<0.001	71 (30.5%)	66 (28.0%)	0.5
Relative	321(26%)	71 (18.9%)	98 (25.7%)	0.02	68 (29.2%)	85 (36.0%)	0.1
Display Material	47(4%)	26 (6.9%)	4 (1.0%)	<0.001	14 (6.0%)	3 (1.3%)	0.006
Other	77(6%)	37 (9.8%)	22 (5.8%)	0.03	12 (5.2%)	6 (2.5%)	0.1
total score (mean [SD])	1.72 (0.98)	1.93 (0.97)	1.618 (0.82)	<0.001	1.721 (0.84)	1.60 (0.84)	0.1

Table 5. Relationship between demographic characteristics and Knowledge score.

Characteristics	Relationship with Knowledge Score	Relationship with Knowledge Score
	B(SE)	**p**
Overall	**Overall**	**Overall**
Age	0.028 (.008)	0.001
Sex	-0.123(0.265)	0.642

Characteristics	Relationship with Knowledge Score	Relationship with Knowledge Score
Education	1.90(.274)	>0.001
District-Kurram	-.426 (.338)	0.208
District-NWTD	2.038 (.338)	>0.001
District-Orakzai	.368 (.338)	0.276
District-SWTD	1.732 (.329)	>0.001
Adults	**Adults**	**Adults**
Age	.014 (0.11)	0.226
Sex	0.077 (.328)	0.814
Education	2.003 (.344)	>0.001
District-Kurram	-.706 (.413)	0.087
District-NWTD	1.999 (.426)	>0.001
District-Orakzai	.573 (.434)	0.188
District-SWTD	2.134 (.418)	>0.001
Adolescents	**Adolescents**	**Adolescents**
Age	0.392 (.092)	>0.001
Sex	-.402 (.444)	0.365
Education	1.701 (.450)	>0.001
District-Kurram	.533 (.590)	0.367
District-NWTD	2.198 (.556)	>0.001
District-Orakzai	.536 (.554)	0.334
District-SWTD	1.403 (.541)	0.01

Results are presented as B(SE) from multiple linear regression adjusting for all demographic variables.

Table 6 . Association between demographic characteristics and attitude towards preventive nature of COVID 19.

Characteristic		Odds of believing disease is preventable OR (95%CI)	p
Overall			
Age		1.02 (0.99 - 1.03)	0.08
Sex		0.43 (0.25 - 0.729)	0.002
Education		2.99 (1.68 - 5.30)	<0.001
District-Kurram		0.04 (0.01 - 0.17)	<0.001
District-NWTD		0.41 (0.08 - 2.12)	0.3
District-Orakzai		0.08 (0.02 - 0.36)	0.001
District-SWTD		0.64 (.015 - 0.27)	<0.001
Adults	**Adults**	**Adults**	**Adults**
Age		1.02 (0.99 - 1.04)	0.2
Sex		0.61 (0.32 - 1.16)	0.1
Education		2.19 (1.07 - 4.46)	0.03
District-Kurram		0.05 (0.01 - 0.20)	<0.001
District-NWTD		0.83 (0.11 - 5.97)	0.8
District-Orakzai		0.12 (0.03 - 0.58)	0.008
District-SWTD		0.10 (0.02 - 0.46)	0.003
Adolescents	**Adolescents**	**Adolescents**	**Adolescents**
Age		1.19 (0.98 - 1.44)	0.06

Characteristic	Odds of believing disease is preventable OR (95%CI)	p
Sex	0.20 (0.07 - 0.54)	0.002
Education	5.02 (1.86 - 13.53)	0.001
District-Kurram	0.45 (0.11 - 1.91)	0.3
District-NWTD	1.62 (0.31 - 8.50)	0.6
District-Orakzai	0.44 (0.11 - 1.69)	0.2
District-SWTD	0.31 (0.08 - 1.13)	0.07

Results are presented as OR (95% CI) from multiple logistic regression adjusting for all demographic variables.

Figure 1: Multistage Sampling for KAP COVID-19 from the Newly Merged Districts of erstwhile FATA, Pakistan.

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figure 1.docx available at https://authorea.com/users/339251/articles/465474-knowledge-attitude-and-practice-survey-on-covid-19-in-newly-merged-districts-of-khyber-pakhthunkhwa-pakistan