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Diseases

1. Site preparedness and quality of HIV sentinel surveillance at antenatal care clinic sites in India, 2019. *Shashi Kant, Sanjay Kumar Rai, Shreya Jha, Nishakar Thakur, Puneet Misra, Kiran Goswami.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 4-7.

Abstract

Background: Quality of HIV sentinel surveillance (HSS) depends on preparedness of the site and adherence to the standard operating procedures (SOPs) for HSS. A designated sentinel site is considered prepared for the round of sentinel surveillance based on the availability of infrastructure, human resource, and consumables. **Objectives:** The study objectives were to describe the site level preparedness and adherence to SOP of antenatal care clinic (ANC) sites during the 16th round of HSS in India. **Methods:** This was a cross-sectional study based on the findings of the supervisory visits conducted by public health specialists in ANC sites during the 16th round of HSS from January to March 2019. Semi-structured checklists were used to assess site-preparedness and adherence to the SOP for HSS. All supervisors were expected to upload the filled pro forma to the HSS management information system (MIS). We present here a descriptive analysis of the uploaded visit reports. **Results:** Of 870 HSS sites, 783 (90%) were visited, and 479 (61.2%) reports were uploaded to MIS. Preround HSS training was not attended by one-fifth (22.6%) of the site in-charges; 35.8% of them had never received any HSS training. SOP was followed at most (94%) of the sites. The most frequently reported problem at the sites was inadequate or delayed availability of consumables. **Conclusion:** The overall quality of site-level preparedness at antenatal clinic sites in India was good. Attention needs to be given to timely and adequate availability of consumables at sentinel sites along with proper administrative support and preround training of site in-charges.

Keywords: HIV Sentinel Surveillance, Site Preparedness, Supportive Supervision

2. HIV Risk profile and its socio-demographic correlates among long-distance truckers in West Bengal, India: Evidence from national HIV sentinel surveillance 2017. *Subrata Biswas, Debjit Chakraborty, Piyali Ghosh, Pradeep Kumar, Rajatashuvra Adhikary, Malay Kumar Saha.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 8-14.

Abstract

Background: Long-distance truckers (LDTs) belong to a special sentinel group with potentially high risk of acquisition of HIV owing to their high mobility, sociodemographic vulnerability, and high-risk behaviors. **Objective:** The objective is to estimate the prevalence of HIV and identifies its sociodemographic correlates among a representative population of LDTs in West Bengal, India. **Methods:** Between May and July 2017, HIV Sentinel Surveillance (HSS) was conducted in West Bengal by the National AIDS Control Organization. A total of 749 LDTs were recruited for the study, were interviewed, and tested for HIV. Descriptive and logistic regression analysis of socio-demographics, sexual risk behavior, and HIV serostatus were performed using SAS 9.3.2. **Results:** The prevalence of HIV among LDT was 1.2% (95% confidence interval [CI] = 0.4–2.0). Mean age was 32.8 years (standard deviation 8.5), 77.1% were currently married, 89.9% were literate, 85.7% visited HSS site for collecting condoms or seeking medical care and treatment, 53.1% were rural residents, 86.7% had sex at least once with a female partner other than wife in the past 6 months, 2.7% had sex with a male partner and 1.7% injected drugs for recreational purpose. Higher age (odds ratio [OR] = 1.1 [95% CI = 1.0–1.1]), literate (OR = 0.3 [95% CI = 0.1–0.9]), visiting HSS sites for collecting condoms or seeking medical care and treatment (adjusted OR [AOR] = 0.2 [95% CI = 0.1–0.6]), rural residence (OR = 0.2 [95% CI = 0.1–0.3]) and duration of stay in home (AOR = 1.3 [95% CI = 1.1–1.5]) were found to be significant predictors of having sex with a female partner other than wife. **Conclusion:** High HIV burden calls for urgency in the implementation of targeted intervention to minimize HIV risk among LDTs in West Bengal to fight against HIV/AIDS.

Keywords: HIV Risk, HIV Sentinel Surveillance, India, Long-Distance Trucker, West Bengal

3. Socio-demographic factors associated with HIV prevalence among pregnant women attending antenatal clinics in six Southern States of India: Evidences from the latest round of HIV sentinel surveillance. *Santhakumar Aridoss, Nagaraj Jaganathasamy, Arvind Kumar, Manikandan Natesan, Rajatashuvra Adhikary, Elangovan Arumugam.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 26-31

Abstract

Background: HIV/AIDS is a global public health issue and its transmission in a defined geographic region is influenced by the interplay of sociodemographic and behavioral factors. Better understanding of sociodemographic characteristics of HIV-positive individuals is required to prevent the spread of HIV among the general population. Objectives: The objective of the study was to find the association between HIV prevalence and sociodemographic characteristics of pregnant women aged 15–49 years attending the antenatal clinics (ANCs) in six Southern states of India. Methods: The data from the latest round of HIV sentinel surveillance, a cross-sectional study, conducted during January–March 2017 among ANC attendees were considered for this analysis. Blood samples along with other relevant information were collected from 98,634 pregnant women from 248 sites across the states. The association between HIV prevalence and sociodemographic variables was examined using multivariable logistic regression. Results: The highest HIV prevalence was reported in Karnataka (0.38%) and Andhra Pradesh (0.38%), followed by Telangana (0.33%), Odisha (0.28%), Tamil Nadu (0.27%), and Kerala (0.05%). In all states, the prevalence was highest among illiterate pregnant women exception being Kerala, wherein the prevalence was highest in pregnant women with schooling up to primary education. A significant association was found between HIV prevalence and spouse occupation in Karnataka and Odisha and spouse migration in Andhra Pradesh and Karnataka. Conclusions: Need for improvising the interventions for the young, illiterates, having a migrant spouse, and spouse occupation as truckers/hotel staff is recommended to the stakeholders involved in HIV management of the six southern states of India.

Keywords: Antenatal Clinic Attendees, Antenatal Clinic, HIV Sentinel Surveillance, Prevention and Control, Sociodemographic Factors

4. Cost-Effectiveness of antiretroviral therapy: A systematic review. *Indrani Gupta, Damini Singh.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 32-38.

Abstract

Background: The mobilization of resources to prevent and treat human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) is unparalleled in the history of public health. The uptake of antiretroviral therapy (ART) has been rapid and unprecedented and made possible by the availability of funding – external and domestic. To justify continuous funding of ART in resource-scarce settings, a spate of cost-effectiveness studies has been undertaken in a number of countries. This paper is based on a systematic review of global studies on cost-effectiveness analysis of ART. **Objectives:** The major objective was to review the existing literature on cost-effectiveness of ART to determine whether ART has been cost-effective (CE) in different settings. **Methods:** We searched PubMed and Google Scholar for articles published between 2008 and 2017. We included studies that measured costs as well as effectiveness of HIV treatment – specifically ART – using incremental cost-effectiveness ratio as one of the outcomes. **Results:** We identified 15 studies that met the search criteria for inclusion in the systematic review. The review confirms that ART programs have been CE across different settings, contexts, and strategies. **Conclusion:** The review would be useful for countries that are straining to raise funds for the health sector, generally, and for AIDS prevention and control program, specifically. This would also be beneficial for carrying out similar studies, if necessary, and as an advocacy tool for garnering additional funding.

Keywords: Antiretroviral Treatment, Cost-Effectiveness, Human Immunodeficiency Virus

5. Human immunodeficiency virus prevalence and high-risk behavior of home-based and nonhome-based female sex workers in three high-prevalent North-Eastern States of India. *Subrata Biswas, Abhik Sinha, Shobini Rajan, Pankaj Kumar Khan, Deepika S Joshi, Malay Kumar Saha.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 46-52

Abstract

Background: Female sex workers (FSWs) have been identified as an important target group for human immunodeficiency virus (HIV)/sexually transmitted infections prevention. **Objectives:** This study aimed to describe sociodemographic and sex work characteristics and to identify the risk factors for HIV infection with special focus on the variations between home-based (HB) and non-HB (NHB) FSWs in three high-prevalent North-Eastern states of India: Manipur, Mizoram, and Nagaland. **Methods:** Data from the National Integrated Bio-Behavioural Surveillance (IBBS) conducted in India during 2014–2015 were utilized in the study. IBBS is a quantitative survey conducted among identified high risk sub within India. Logistic regression analyses were performed using SAS 9.3.2 to determine the distribution and associations of sociodemographics and risk behaviors with HIV seropositivity of HB and NHB FSWs. **Results:** HIV prevalence was found higher among NHB FSWs compared to HB FSW (7.3% vs. 4.6%). The proportions of FSW among HB (66.7%) were in sex work for longer duration are significantly higher than for NHB (60.2%) while risk of HIV infection due to injecting drug use was higher in NHB FSW (11.7% vs. 8.7%). Reference to FSW who were currently married, those who were widowed/divorced/separated had 2.73-fold risk of HIV. FSW who did not have any other income source were associated with 1.73 times more risk of HIV infection. Injecting drugs user among FSW respondents had four times higher likelihood to be HIV positive. **Conclusion:** A substantial proportion of NHB FSWs is mobile in nature. Targeted interventions are required urgently to minimize HIV risk among those FSWs especially the widowed/divorced/separated, sex work is only income source and who used injecting drugs for nonmedical purpose.

Keywords: Female Sex Worker, Integrated Bio-Behavioral Surveillance, North-Eastern India, Variation

6. Size Estimation of high-risk groups for hiv infection in india based on data from national integrated bio-behavioral surveillance and targeted interventions.

Elangovan Arumugam, Boopathi Kangusamy, Damodar Sahu, Rajatashuvra Adhikary, Pradeep Kumar, Santhakumar Aridoss. Indian Journal of Public Health, Vol 64, No.5, 2020, P: 39-45.

Abstract

Background: Targeted interventions (TIs) are one of the most effective strategies to control HIV/AIDS transmission, especially among the high-risk groups (HRGs). Implementation of HIV/AIDS control strategies relies heavily on estimation of the size of HRG population. Size estimation for key populations such as female sex workers (FSWs), men who have sex with men (MSM), and injecting drug users (IDUs) is a crucial component of national HIV strategic planning. **Objective:** The objective of this study was to estimate the size of FSWs, MSM, and IDUs in various states of India. **Methods:** The program multiplier method was used to estimate the size of FSWs, MSM, and IDUs across the country using two distinct but overlapping data sources – Integrated Bio-Behavioral Surveillance and TI program from the same geographical area at the same time period. **Results:** In India, as on 2018–2019, there were nearly 18.2 lakhs estimated FSWs accounting to 0.53% among female population aged 15–49 years, with a highest in West Bengal (4.5 lakhs); 5.7 lakhs estimated MSM accounting to 0.16% among male population aged 15–49 years, with a highest in Gujarat (0.7 lakh); and 3.9 lakhs estimated IDUs accounting to 0.11% among male population aged 15–49 years, with a highest in Uttar Pradesh (0.5 lakh). **Conclusions:** The current size estimates on HRGs will support the development of projections and estimations of the HIV epidemic at national and state levels. These estimates also help in framing national guidelines such as HIV strategic planning, program design, allocation of resources, prioritizing the interventions, and monitoring and evaluation.

Keywords: Female Sex Workers, Injecting Drug User, India, Men Who Have Sex with Men, Program Multiplier Method, Size Estimation

7. HIV/AIDS-Related risk behaviors, HIV prevalence, and determinants for HIV prevalence among hijra/transgender people in India: Findings from the 2014–2015 integrated biological and behavioural surveillance. *Shobini Rajan, Pradeep Kumar, Bhavna Sangal, Arvind Kumar, Shreena Ramanathan, Savina Ammassari.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 53-60.

Abstract

Background: Hijra or transgender (H/TG) people are significantly affected by HIV in India. HIV prevalence among H/TG is the second highest after people who inject drugs. Effective interventions require understanding about various risk behaviors and associated factors for high prevalence. **Objectives:** This study analyzes the known risk behaviors and vulnerabilities of HIV-positive and HIV-negative H/TG people to identify the determinants of HIV seropositivity in this high-risk group. **Methods:** Using secondary data from India's 2014 to 2015 Integrated Biological and Behavioural Surveillance survey, this analysis was conducted among 3325 H/TG people across seven states. Probability-based sampling methods were used to recruit H/TG people. Informed consent was obtained for the collection of behavioral information and blood samples for HIV testing. Multivariable binary logistic regression analysis was undertaken to identify the determinants of HIV seropositivity. **Results:** HIV prevalence for this group of respondents was 9.5%. Multivariable analysis of survey data revealed higher odds of HIV infection if H/TG had regular male partners (adjusted odds ratio [AOR]: 1.81, confidence interval [CI]: 1.07–3.06), were living in the states of Maharashtra (AOR: 6.08, CI: 3.02–12.22) and Odisha (AOR: 2.91, CI: 1.05–8.06), and were members of self-help groups (AOR: 2.08, CI: 1.04–4.14). None of the demographic or behavioral correlates of risk were found to be associated with HIV infection. **Conclusion:** The findings suggest that community and structural factors, which are inadequately covered in surveys such as IBBS, play a more important role than individual behavioral factors.

Keywords: Determinants, Hijras/Transgender People, HIV, Sexual Behavior, Surveillance

8. Factors associated with human immunodeficiency virus infection and self-assessed risk to human immunodeficiency virus among injecting drug users in Manipur, India. Balasubramanian Ganesh, Kriina Mosoniro, Joshua Vasna, Arumugam Elangovan, Aridoss Santhakumar, Rajan Shobini. Indian Journal of Public Health, Vol 64, No.5, 2020, P: 61-66

Abstract

Background: The proximity of Northeast India to the Golden Triangle facilitates easy accessibility to illicit drugs, resulting in a higher proportion of injecting drug users (IDUs) in the states of Northeast India. The estimated human immunodeficiency virus (HIV) prevalence among IDU in Manipur which is 1.43% is higher than that of the national figure. **Objectives:** The objectives of the study were to find the factors associated with HIV infection and correlate the association between HIV status and self-assessed risk to HIV among IDUs in Manipur. **Methods:** National Integrated Biological and Behavioral Surveillance (2014–2015) data were used for the study; all analyses done were weighted. In Manipur, information was collected from 1594 IDUs during the surveillance between 2014 and 2015 across four domains, namely Chandel (396), Imphal East (397), Thoubal (401), and Senapati (400). Chi-square test was performed to test the association between the independent and dependent variables. Multivariable logistic regression was performed to identify risk factors associated with HIV positivity. **Results:** Higher age, unsafe injecting practice, low education status, and low-income status were significantly ($P < 0.05$) associated with HIV infection among IDUs in Manipur. Self-assessed risk of HIV infection by IDU was significantly associated with HIV positivity. **Conclusion:** Interventions among IDUs in Manipur should focus on emphasizing safe injecting practices along with creating awareness on HIV prevention and management.

Keywords: Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome, Injecting Drug User, Integrated Biological and Behavioral Surveillance, Manipur, People Who Inject Drugs

9. Did Inclusion of informed consent affect the observed HIV prevalence rate among injecting drug users during HIV sentinel surveillance 2017 in Delhi, Uttar Pradesh, Uttarakhand, and Jharkhand States of Central Zone of India? *Sanjay Kumar Rai, Farhad Ahamed, Shashi Kant, Partha Haldar, Shreya Jha, Shobini Rajan.* Indian Journal of Public Health, Vol 64, No.5, 2020, P: 67-70

Abstract

Background: In 2017, the sampling procedure for HIV sentinel surveillance (HSS) among all high-risk groups was changed from the consecutive sampling to random sampling along with the introduction of linked anonymous testing strategy with informed written consent. **Objective:** The objective of this study was to assess whether the inclusion of informed consent affects the HIV positivity rate among the participants and nonparticipants injecting drug users (IDU) in HSS 2017 in four states of Central Zone of India. **Methods:** This study was a cross-sectional study. All sentinel sites from Delhi, Uttar Pradesh, Jharkhand, and Uttarakhand located at targeted intervention facilities in 2017 were included in the study. Information about the participation and nonparticipation of each high-risk individual at the sentinel site was gathered from the master list, respective registers, and website portal of the National AIDS Control Organization. A total of 8639 individuals were included in the analysis. **Results:** Overall, 16 sites in four states were included in the study. Overall, the nonparticipation rate of IDUs was 14.3%; highest being for Delhi (17.2%), followed by Uttar Pradesh (14.6%), Uttarakhand (10.9%), and Jharkhand (4.4%). Overall, the HIV-positivity rate among nonparticipants (9.6%) was significantly higher ($P = 0.009$) compared to the participants (6.7%). **Conclusion:** Change in methodology and seeking written informed consent might have an effect on the nonparticipation in all four states. This, in turn, could have led to the underestimation of HIV-positivity rates among IDU in the states.

Keywords: HIV Prevalence, HIV Sentinel Surveillance, Injecting Drug Users

10. Impact of nonpharmacological interventions on COVID-19 transmission dynamics in India. *Purvi Patel, Aditya Athotra, TP Vaisakh, Tanzin Dikid, Sudhir Kumar Jain, NCDC COVID Incident Management Team.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 142-146.

Abstract

Background: As of May 4, 2020, India has reported 42,836 confirmed cases and 1,389 deaths from COVID-19. India's multipronged response included nonpharmacological interventions (NPIs) like intensive case-based surveillance, expanding testing capacity, social distancing, health promotion, and progressive travel restrictions leading to a complete halt of international and domestic movements (lockdown). **Objectives:** We studied the impact of NPI on transmission dynamics of COVID-19 epidemic in India and estimated the minimum level of herd immunity required to halt it. **Methods:** We plotted time distribution, estimated basic (R_0) and time-dependent effective (R_t) reproduction numbers using software R, and calculated doubling time, the growth rate for confirmed cases from January 30 to May 4, 2020. Herd immunity was estimated using the latest R_t value. **Results:** Time distribution showed a propagated epidemic with subexponential growth. Average growth rate, 21% in the beginning, reduced to 6% after an extended lockdown (May 3). Based on early transmission dynamics, R_0 was 2.38 (95% confidence interval [CI] = 1.79–3.07). Early, unmitigated R_t = 2.51 (95% CI = 2.05–3.14) (March 15) reduced to 1.28 (95% CI = 1.22–1.32) and was 1.83 (95% CI = 1.71–1.93) at the end of lockdown Phase 1 (April 14) and 2 (May 3), respectively. Similarly, average early doubling time (4.3 days) (standard deviation [SD] = 1.86) increased to 5.4 days (SD = 1.03) and 10.9 days (SD = 2.19). Estimated minimum 621 million recoveries are required to halt COVID-19 spread if R_t remains below 2. **Conclusion:** India's early response, especially stringent lockdown, has slowed COVID-19 epidemic. Increased testing, intensive case-based surveillance and containment efforts, modulated movement restrictions while protecting the vulnerable population, and continuous monitoring of transmission dynamics should be a way forward in the absence of effective treatment, vaccine, and undetermined postinfection immunity.

Keywords: COVID-19, India, Reproduction Number, Severe Acute Respiratory Syndrome Coronavirus 2

11. Genome analysis of SARS-CoV-2 isolates occurring in India: Present scenario.

Ragunathan Devendran¹, Manish Kumar, Supriya Chakraborty. Indian Journal of Public Health, Vol 64, No.6, 2020, P: 147-155.

Abstract

Background: The origin of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) is still a debatable topic. The association of the virus spread from the market is supported by the close relation of genome sequences of environmental surface samples with virus samples from earliest patients by phylogenetic analysis. **Objectives:** To have an insight into the SARS-CoV-2 genome sequences reported from India for better understanding on their epidemiology and virulence. **Methods:** Genome sequences of Indian isolates of SARS-CoV-2 were analyzed to understand their phylogeny and divergence with respect to other isolates reported from other countries. Amino acid sequences of individual open reading frames (ORFs) from SARS-CoV-2 Indian isolates were aligned with sequences of isolates reported from other countries to identify the mutations occurred in Indian isolates. **Results:** Our analysis suggests that Indian SARS-CoV-2 isolates are closely related to isolates reported from other parts of the world. Most ORFs are highly conserved; mutations were also detected in some ORFs. We found that most isolates reported from India have key mutations at 614th position of the S protein and 84th position of the ORF 8, which has been reported to be associated with high virulence and high transmission rate. **Conclusion:** An attempt was made to understand the SARS-CoV-2 virus reported from India. SARS-CoV-2 reported from India was closely similar to other SARS-CoV-2 reported from other parts of the world, which suggests that vaccines and other therapeutic methods generated from other countries might work well in India. In addition, available sequence data suggest that majority of Indian isolates are capable of high transmission and virulence.

Keywords: Coronavirus, Coronavirus Disease-19, Mutation, Severe Acute Respiratory Syndrome Coronavirus-2 Isolates, Transmission, Virulence

12. Effectiveness of preventive measures against COVID-19: A systematic review of In Silico modeling studies in indian context. *Arista Lahiri, Sweety Suman Jha, Saikat Bhattacharya, Soumalya Ray, Arup Chakraborty.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 156-167.

Abstract

Background: In the absence of any approved treatment or vaccine against novel Severe Acute Respiratory Syndrome Coronavirus -2 (SARS-CoV-2) infection, Non-Pharmaceutical Interventions (NPIs) are the cornerstone to prevent the disease, especially in a populous country like India. **Objectives:** To understand the effectiveness of NPIs reported in the contemporary literatures describing prediction models for prevention of the ongoing pandemic of SARS-CoV-2 specifically in Indian population. **Methods:** Original research articles in English obtained through keyword search in PubMed, WHO Global Database for COVID19, and pre-print servers were included in the review. Thematic synthesis of extracted data from articles were done. **Results:** Twenty-four articles were found eligible for the review - four published articles and twenty pre-print articles. Compartmental model was found to be the most commonly used mathematical model; along with exponential, time varying, neural network and cluster kinetic models. Social distancing, specifically lockdown, was the most commonly modelled intervention strategy. Additionally, contact tracing using smartphone application, international travel restriction, increasing hospital/ICU beds, changes in testing strategy were also dealt with. Social distancing along with increasing testing seemed to be effective in delaying the peak of the epidemic and reducing the peak prevalence. **Conclusion:** Although there is mathematical rationality behind implementation of social distancing measures including lockdown, this study also emphasised the importance of other associated measures like increasing tests and increasing the number of hospital and ICU beds. The later components are particularly important during the social mixing period to be observed after lifting of lockdown.

Keywords: Contact Tracing, COVID-19, Lockdown, Mathematical Model, Preventive Measures, Quarantine, Systematic Review

13. COVID-19 and lockdown: Insights from Mumbai. *Kanchan Mukherjee.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 168-171.

Abstract

Background: Mumbai is facing the full brunt of the COVID-19 pandemic epidemiologically and economically. Objectives: The objective was to understand the spatial distribution and trends of the severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) in Mumbai during the lockdown period and draw insights for effective actions. Methods: Spatial and trend analysis was conducted to trace the spread of the virus during the lockdown period in April 2020. The administrative divisions of Mumbai, in the form of wards and zones, have been used as units of analysis. Results: Greater Mumbai area occupies only 0.015% of the landmass of India, but is contributing to over 20% of the SARS-CoV-2 cases in India. Cases of SARS-CoV-2 infections have increased over 375 times within 50 days of the lockdown. An analysis of trends across the wards during the 3-week period (April 4 to April 25) shows a skewed pattern, with three zones out of six contributing to the vast majority of cases in Mumbai. The wards with higher formal economic activity are relatively less affected than the other wards. The test positivity rate in Mumbai is much higher than the rest of India. Conclusion: The study suggests that the virus had already spread to the community in Mumbai before the lockdown started.

Keywords: Administrative Wards, Data Triangulation, Economics, Effectuation Theory, Epidemiology, India, Policy Entrepreneurship, Severe Acute Respiratory Syndrome-Coronavirus-2, Testing Rate

14. Impact of lockdown following COVID-19 on the gaming behavior of college students. *Yatan Pal Singh Balhara, Dheeraj Kattula, Swarndeeep Singh, Surekha Chukkali, Rachna Bhargava.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 172-176.

Abstract

Background: The uncertainty about the impact of the lockdown in wake of COVID-19 on their future academic and career prospects, besides other concerns; makes college

students, particularly vulnerable to stress during the COVID-19 pandemic. Gaming has been recognized as a coping mechanism against stress in the previously published literature. Objectives: The current study aimed to assess the gaming behavior of college students during the lockdown following COVID-19. Methods: Data were collected from a cohort of students that constituted the sampling frame of an ongoing project. A total of 393 college students were enrolled. All the eligible students were subsequently contacted through E-mail and WhatsApp messenger and invited to share the details. Results: About half (50.8%) of the participants reported that their gaming behavior had increased, whereas 14.6% reported a decrease in their gaming during the lockdown period. In binary logistic regression analysis, hours of gaming per day (odds ratio [OR] 1.75 [1.29–2.36]), increase in gaming due to examination related stress (OR 4.96 [1.12–21.98]), and belief that gaming helps managing stress (OR 4.27 [1.65–11.04]), were found to be independently associated with gaming behavior during lockdown period. Conclusion: In the lockdown period following COVID-19 pandemic, the increase in gaming behavior was associated with examination-related stress and the belief that gaming helps combat stress. These observations highlight the need to focus on the coping style of the students to ascertain the likelihood of them engaging in gaming behavior as a coping mechanism against stress.

Keywords: COVID-19, Lockdown, Gaming Disorder, Stress

15. Insights from COVID-19 cluster containment in Bhilwara District, Rajasthan.
Badrilal Meghwal, Shyambhavee Behera, Akshay C Dhariwal, Deepak Saxena, Rommel Singh, Sanjiv Kumar. Indian Journal of Public Health, Vol 64, No.6, 2020, P: 177-182.

Abstract

Background: In March 2020, a healthcare professional from a renowned private hospital, in the textile city of Bhilwara, Rajasthan, reported clustering of cases of pneumonia amongst doctors and paramedical staff suspected to be due to COVID-19. The basis of suspicion was clinico-eco-epidemiologic-radiological findings as, by that time, about 20 COVID19 cases were reported from the state of Rajasthan including a big Italian group of tourists who travelled extensively in Rajasthan, including Udaipur city. Objectives: The current study presents the field experience of the Central and the State Rapid Response Teams (RRTs) in the cluster containment at Bhilwara. Methods: The information regarding the sociodemographic profile of the cases was provided by the

Senior Medical Officer In-charge. The containment strategy was modeled under 6 pillars. Google Maps was used for preparing spot map. Results: Immediate public health actions of cluster containment including contact tracing, quarantine, and isolation were initiated using epidemiological approach of mapping the cluster and taking care of reservoir of infection by the District Public Health Team supported by Multidisciplinary Rapid Response Team. This was supplemented by strict enforcement of lock down in the District taking care of daily need of the community by the leadership of administration with very strong intersectoral co-ordination (locally called “ruthless containment”). Conclusion: The forthcoming challenge resides in re-establishment of inter-district and inter-state travel, which can become a risk of re-entry of the new cases, which needs to be taken care of, with the help of stringent administrative measures and screening at all points of entry. The team in Bhilwara needs to remain vigilant to pick up any imported cases early before local transmission establishes.

Keywords: Bhilwara, Cluster Containment, COVID-19, Explosive Epidemic, Health-Care Workers

16. An epidemiological study of laboratory confirmed COVID-19 cases admitted in a tertiary care hospital of Pune, Maharashtra. *Muralidhar Parashuram Tambe, Malangori A Parande, Vinay S Tapare, Pradip S Borle, Rajesh N Lakde, Sangita C Shelke, BJMC COVID Epidemiology group.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 183-187

Abstract

Background: India has reported more than 70,000 cases and 2000 deaths. Pune is the second city in the Maharashtra state after Mumbai to breach the 1000 cases. Total deaths reported from Pune were 158 with a mortality of 5.7%. To plan health services, it is important to learn lessons from early stage of the outbreak on course of the disease in a hospital setting. Objectives: To describe the epidemiological characteristics of the outbreak of COVID-19 in India from a tertiary care hospital. Methods: This was a hospital-based cross-sectional study which included all admitted laboratory confirmed COVID19 cases from March 31, to April 24, 2020. The information was collected in a predesigned pro forma which included sociodemographic data, duration of stay, family background, outcome, etc., by trained staff after ethics approval. Epi Info7 was used for

data analysis. Results: Out of the total 197 cases, majority cases were between the ages of 31–60 years with slight male preponderance. Majority of these cases were from the slums. Breathlessness was the main presenting symptom followed by fever and cough. More than 1/5th of patients were asymptomatic from exposure to admission. The case fatality rate among the admitted cases was 29.4%. Comorbidity was one of the significant risk factors for the progression of disease and death (odds ratio [OR] = 16.8, 95% confidence interval [CI] = 7.0 – 40.1, $P < 0.0001$). Conclusion: Mortality was higher than the national average of 3.2%; comorbidity was associated with bad prognosis.

Keywords: COVID-19, Epidemiology, Tertiary Care Hospital

17. Distribution and growth rate of COVID-19 outbreak in Tamil Nadu: A log-linear regression approach. *Adhin Bhaskar, Chinnaiyan Ponnuraja, Ramalingam Srinivasan, Srinivasan Padmanaban.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 188-191.

Abstract

Background: Most of the countries are affected with the pandemic outbreak of the coronavirus infection. Understanding the severity and distribution in various regions will help in planning the controlling measures. Objectives: The objective was to assess the distribution and growth rate of COVID-19 infection in Tamil Nadu, India. Methods: The data on the number of infections of COVID-19 have been obtained from the media reports released by the Government of Tamil Nadu. The data contain information on the incidence of the disease for the first 41 days of the outbreak started on March 7, 2020. Log-linear model has been used to estimate the progression of the COVID-19 infection in Tamil Nadu. Separate models were employed to model the growth rate and decay rate of the disease. Spatial Poisson regression was used to identify the high-risk areas in the state. Results: The models estimated the doubling time for the number of cases in growth phase as 3.96 (95% confidence interval [CI]: 2.70, 9.42) days and halving time in the decay phase as 12.08 (95% CI: 6.79, 54.78) days. The estimated median reproduction numbers were 1.88 (min = 1.09, max = 2.51) and 0.76 (min = 0.56, max = 0.99) in the growth and decay phases, respectively. The spatial Poisson regression identified 11 districts as high risk. Conclusion: The results indicate that the outbreak is

showing decay in the number of infections of the disease which highlights the effectiveness of controlling measures.

Keywords: COVID-19 Outbreak, Decay Rate, Growth Rate, Tamil Nadu

18. Facemasks for prevention of viral respiratory infections in community settings: A systematic review and meta-analysis. *Nishant Aggarwal, Vignesh Dwarakanathan, Nitesh Gautam, Animesh Ray.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 192-200.

Abstract

Background: There is paucity of evidence on the effectiveness of facemask use in COVID-19 in community settings. **Objectives:** We aimed to estimate the effectiveness of facemask use alone or along with hand hygiene in community settings in reducing the transmission of viral respiratory illness. **Methods:** We searched PubMed and Embase for randomized controlled trials on facemask use in community settings to prevent viral respiratory illnesses published up to April 25, 2020. Two independent reviewers were involved in synthesis of data. Data extraction and risk-of-bias assessment were done in a standard format from the selected studies. Outcome data for clinically diagnosed or self-reported influenza-like illness (ILI) was recorded from individual studies. Pooled effect size was estimated by random-effects model for “facemask only versus control” and “facemask plus hand hygiene versus control.” **Results:** Of the 465 studies from PubMed and 437 studies from Embase identified from our search, 9 studies were included in qualitative synthesis and 8 studies in quantitative synthesis. Risk of bias was assessed as low (n = 4), medium (n = 3), or high (n = 1) risk. Interventions included using a triple-layered mask alone or in combination with hand hygiene. Publication bias was not significant. There was no significant reduction in ILI either with facemask alone (n = 5, pooled effect size: -0.17; 95% confidence interval [CI]: -0.43-0.10; P = 0.23; I² = 10.9%) or facemask with handwash (n = 6, pooled effect size: (n=6, pooled effect size: -0.09; 95% CI: -0.58 to 0.40; P = 0.71, I² = 69.4%). **Conclusion:** Existing data pooled from randomized controlled trials do not reveal a reduction in occurrence of ILI with the use of facemask alone in community settings.

Keywords: Coronavirus, COVID-19, Hand Hygiene, Masks, Pandemics, Severe Acute Respiratory Syndrome Coronavirus 2

19. Development and Initial Validation of the COVID-19 Anxiety Scale. *Viswa Chaitanya Chandu, Srinivas Pachava, Viswanath Vadapalli, Yamuna Marella.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 201-204.

Abstract

Background: Safeguarding the psychological well-being of the public is also an integral component of fighting COVID-19. However, there is limited availability of psychometric measures to document COVID-19-related anxiety among the general public. Objectives: This study was aimed at developing a validated scale to measure COVID-19-related anxiety. Methods: Three hundred and seven subjects from different gender, educational categories participated in the study. Exploratory factor analysis for the determination of factor structure, Pearson's correlation test, and Kruskal–Wallis ANOVA were employed in data analysis using SPSS version 20 software. Results: COVID-19 Anxiety Scale (CAS) demonstrated a two-component structure identified as: “fear of social interaction;” “illness anxiety.” The final scale with seven items demonstrated good internal consistency reliability (Cronbach's Alpha 0.736). CAS exhibited good construct validity showing moderately negative correlation (Pearson's $r = -0.417$) with the self-rated mental health and resulted in higher scores among individuals with lower educational qualification (Kruskal–Wallis ANOVA $\chi^2 [2, 303] = 38.01; P = 0.001$). Conclusion: CAS is a rapidly administrable, valid, and reliable tool that can be used to measure COVID-19-related anxiety among the Indian population.

Keywords: Coronavirus, Principal Component Analysis, Psychometrics

20. Knowledge, attitude, and practices related to COVID-19 pandemic among social media users in J&K, India. *Sabira Aalia Dkhar, Ruqia Quansar, Sheikh Mohd Saleem, S Muhammad Salim Khan.* Indian Journal of Public Health, Vol 64, No.6, 2020, P: 205-210.

Abstract

Background: A series of measures have been suggested to reduce Covid-19 infection, including knowledge training for prevention and control, isolation, disinfection, classified protections at different degrees in infection areas, and protection of confirmed cases. **Objectives:** We conducted this study with an aim to assess the knowledge, attitude and practice among the general population regarding COVID-19. **Methods:** This was a cross-sectional study carried out by the Department of Community Medicine, Government Medical College, Srinagar in the month of April 2020. The questionnaire had four segments to collect data regarding social-demographic details, knowledge regarding Covid-19, attitude and practice based questions. The questionnaire was shared via social media applications like facebook and Whatsapp to reach the target population. Continuous variables were summarized as frequency and percentage. All the analysis was done using Microsoft Excel 2016. Among participants who responded, 1252 (82%) were in the age group of 18–40 years and 912 (60%) from urban areas. **Results:** A total of 934 (61%) respondents had heard details on COVID-19 from the social media, 1358 (89%) knew all ways of coronavirus transmission, 602 (40%) felt that COVID-19 is a serious disease, 1184 (78%) responded that they totally agree with the lockdown decision, and 1296 (85%) responded that lockdown is helping in reducing the number of cases. The majority, i.e. 1318 (87%), followed advisories and reported washing hands with soap and water regularly, 1108 (73%) reported regularly wearing masks, 1344 (89%) reported following lockdown guidelines, and 1306 (87%) reported maintaining social distancing. The respondents exhibited good knowledge, positive attitude, and sensible practices regarding COVID-19. **Conclusion:** Our study showed that the respondents have exhibited good knowledge, positive attitude and sensible practices regarding covid-19 during the pandemic.

Keywords: Attitude, COVID-19, Knowledge, Practice, UT of J and K

21. Endocrine dysfunction among patients with COVID-19: A single-center experience from a tertiary hospital in India. *Bharat Kumar, Maya Gopalakrishnan, Mahendra Kumar Garg, Purvi Purohit, Mithu Banerjee, Praveen Sharma, Satyendra Khichar, Nikhil Kothari, Pradeep Bhatia, Vijay Lakshmi Nag, Sanjeev Misra.* Indian Journal of Endocrinology and Metabolism, Vol 25, No.1, Jan-Feb 2021, P: 14-19

Objective: COVID-19 has emerged as a multi-system disease with the potential for endocrine dysfunction. We aimed to study the hormonal profile of hospitalized patients with COVID-19 at a tertiary care referral hospital at Jodhpur, India. Design: A hospital-based clinical study of endocrine profile of COVID-19 patients conducted from 15th May to 30th June 2020 after ethical approval. Measurements: Fasting blood samples for free thyroxine (T4), free tri-iodothyronine (T3), thyroid stimulating Hormone (TSH), serum prolactin; basal and 1 h post-intramuscular adrenocorticotrophic hormone (ACTH) stimulated cortisol, interleukin-6 (IL-6), and high sensitivity C-reactive protein (hsCRP) were collected within 24 h of admission after written informed consent. All hormones and IL-6 were analyzed by chemiluminescent immunoassay. hsCRP was measured by immune-turbidimetric assay. Results: Of 235 patients studied, 14% had severe disease and 5.5% died. Adrenal insufficiency was present in 14%, most of whom had mild disease. A robust adrenal response was observed in those with severe disease. Basal and post-ACTH serum cortisol were significantly increased in severe disease or those who died compared to those who were mild or asymptomatic. Basal and post-ACTH serum cortisol showed a significant positive correlation with hsCRP but not with IL-6. Low T3 and low T4 syndrome were documented in 25% and 5%, respectively. Serum TSH and FT3 levels declined significantly from asymptomatic to severe category. Hyperprolactinemia was found in 21 patients. hsCRP showed a rising trend with disease severity while IL-6 did not. Conclusions: Endocrine dysfunction in the form of adrenal insufficiency, low T3, and low TSH syndrome and hyperprolactinemia were common COVID-19 hospitalized patients.

Keywords: COVID-19, Endocrine dysfunction

Endocrinology

22. Lipid profile in infant. *Ashok Kumar, Kaushik Pandit, Purushottam Chatterjee, Pradip Mukhopadhyay, Sujoy Ghosh.* Indian Journal of Endocrinology and Metabolism, Vol 25, No.1, Jan-Feb 2021, P: 20-22

Introduction: Alteration in lipid parameters at birth has a strong association with the development of cardiovascular disease in later life. Material and Methods: Sixty-one infants below the age of 6 months underwent evaluation of lipid parameters. The infants studied were categorized into two groups of ≤ 4 and > 4 weeks of age, wherein their lipid parameters were compared. Results: The normal distribution of lipid parameters of infants < 6 months was generated. The mean total cholesterol, triglyceride, HDL-cholesterol, LDL-cholesterol was 126.2 ± 26.5 , 149.1 ± 48.6 , 40.7 ± 14.6 , and 69.4 ± 19.4 mg/dl, respectively. The total cholesterol and LDL-cholesterol measured in ≤ 4 and > 4 weeks of age groups were statistically not different (total cholesterol 125.0 ± 30.1 mg/dl vs 127.4 ± 23.4 mg/dl, $P = 0.727$, and LDL-cholesterol 66.0 ± 19.2 mg/dl vs 75.4 ± 21.2 mg/dl, $P = 0.780$). However, the HDL-cholesterol and triglycerides measured at ≤ 4 weeks versus > 4 weeks age groups were statistically different (HDL-cholesterol 44.9 ± 17.2 mg/dl vs 36.9 ± 10.8 mg/dl, $P = 0.031$, and triglyceride 147.4 ± 60.2 mg/dl vs 186.5 ± 75.7 mg/dl, $P = 0.030$). Conclusion: The mean lipid parameters were significantly more atherogenic compared to the Western population. Triglyceride levels and HDL-cholesterol levels change significantly after 4 weeks of age compared to that observed before 4 weeks of age.

Keywords: Lipid Parameters, Cardiovascular Diseases, Infants, Triglyceride levels, HDL-cholesterol levels

23. Population reference ranges of urinary endogenous sulfate steroids concentrations and ratios as complement to the steroid profile in sports antidoping. *Khadija Saada Ariadni Vonapartia Ioanna Athanasiadoua Amal Saleha Wadha Abushareedaa Aisha Alwahaibia Bibi Fatima Ajab Khana, Rodrigo Aguileraa Souheil Kraiema Peter L.Horvatovichb Amal Essa Al-Muraikhia Mohammed Al Maadheeda Costas Georgakopouloua.* *Steroids*, Vol 152, December 2019, P: 108477

Abstract

The population based Steroid Profile (SP) ratio of testosterone (T) and epitestosterone (E) has been considered as a biomarker approach to detect testosterone abuse in '80s. The contemporary Antidoping Laboratories apply the World Antidoping Agency (WADA) Technical Document (TD) for Endogenous Androgenic Anabolic Steroids (EAAS) in the analysis of SP during their screening. The SP Athlete Biological Passport (ABP) adaptive model uses the concentrations of the total of free and glucuronide conjugated forms of six EAASs concentrations and ratios measured by GC/MS. In the Antidoping Lab Qatar (ADLQ), the routine LC/MS screening method was used to quantitatively estimate the sulfate conjugated EAAS in the same analytical run as for the rest qualitative analytes. Seven sulfate EAAS were quantified for a number of routine antidoping male and female urine samples during screening. Concentrations, statistical parameters and selected ratios for the 6 EAAS, the 6 sulfate EAAS and 29 proposed ratios of concentrations from both EAAS and sulfate EAAS, which potentially used as SP ABP biomarkers, population reference limits and distributions have been estimated after the GC/MSMS analysis for EAAS and LC/Orbitrap/MS analysis for sulfate EAAS.

Keywords: Sports Antidoping, Steroid Profile, Endogenous Sulfate Steroids, Endogenous Steroids Ratios, Population Reference Ranges, Population Reference Limits.

24. Effects of transdermal administration of testosterone gel on the urinary steroid profile in hypogonadal men: Implications in antidoping analysis.

Michele Iannonea, Amelia, Palermoa, Xavier de la Torrea, Francesco Romanelli, Andrea Sansoneb, Massimiliano, Sansoneb, Andrea, Lenzib, Francesco Botrèab. Steroids, Vol 152, December 2019, P: 108491

Abstract

Testosterone is one of the most abused pseudo-endogenous anabolic steroids in sport doping. The current method adopted to detect the abuse of testosterone and other pseudo-endogenous steroids (endogenous steroids when administered exogenously) is first based on the longitudinal monitoring of several urinary biomarkers, which constitute the so called "steroidal module" of the Athlete Biological Passport (ABP): atypical samples undergo a confirmation analysis based on the measurement of the $^{13}\text{C}/^{12}\text{C}$ isotopic ratio of selected target compounds, to distinguish their endogenous or exogenous origin. At the same time, testosterone administration can be allowed in athletes diagnosed with hypogonadism, provided they are granted a therapeutic use exemption by the relevant medical authority.

In this pilot study we have investigated whether the approach based on the preliminary determination of the urinary steroid profile, in the format considered in the steroidal module of the ABP, also integrated with the inclusion of the sulfo-conjugates and of additional target steroids, can retain its validity also in the case of hypogonadal athletes. We have studied the effects of a single low dose (40 mg) of testosterone gel (T-gel) on the urinary concentration of the markers of steroidal module of the ABP, as well as on some additional steroid markers. The study was based on the analysis of urinary samples from 19 non-hospitalized hypogonadal men, 10 of them with late-onset hypogonadism (LOH), collected before, after 4 h and after 24 h the transdermal self-administration of 40 mg of T-gel. None of the patient had any co-morbidities possibly affecting the urinary excretion of the steroidal markers. The steroidal markers were quantified by gas chromatography coupled to tandem mass spectrometry (GC-MS/MS) after the enzymatic hydrolysis of the respective glucuro-conjugates and the chemical hydrolysis of the respective sulfo-conjugates. Targeted GC-MS/MS analysis was carried out operating in electron impact (EI) ionization mode, with acquisition in multiple reaction monitoring (MRM) mode.

Our preliminary results show that, as expected, the treatment with T-gel leads, in all hypogonadal men, to an increase of the urinary concentration of the glucuro-conjugate metabolites of testosterone and its main metabolites, with special relevance to those with 5α -reduction. Furthermore, samples collected from non-LOH hypogonadal men showed an increase also in the levels of epitestosterone glucuronide, testosterone

sulfate and epitestosterone sulfate. Apart from their biochemical and pharmacological relevance, these outcomes could be leveraged to refine the analytical strategy currently followed in the antidoping field for the analysis of the urinary steroidal markers, with potential implications also in other forensic and/or clinical investigations.

Keywords: Testosterone, Doping, Urinary Steroid Profile, Athlete Biological Passport, Hypogonadism, Gas Chromatography-Mass Spectrometry

25. Screening of different drug design tools to predict the mode of action of steroidal derivatives as anti-cancer agents. *Mohamed S. Nafiea, Mohamed A., Tantawybc, Gamal A.Elmgeed, b.* Steroids, Vol 152, December 2019, P: 108485.

Abstract

There is a pressing need to discover and develop novel drugs against cancer. With the new era of bioinformatics, which integrates different aspects, drug development has been tremendously improved. Recently, extensive research was directed towards the rational modification of steroid molecules against different disease especially cancer. Moreover, heterocyclic steroid derivatives have shown a lot of different biological activities such as antimicrobial, anti-inflammatory, and anti-cancer activities. Molecular docking methods can be used to explore how the steroid derivatives conformations can adopt within the binding sites of specific macromolecular targets involved in cancer progression. We conducted this study to investigate the accuracy of different molecular docking calculations using different steroidal molecular targets, and to define the most accurate one to study the mode of action of steroid derivatives as potential anti-cancer drugs. Our results revealed that the Dock6, PLANTS, AutoDock, GLIDE (SP and XP), and GOLD (ASP, Chemscore, and PLP) software were able to maintain the binding mode of the co-crystallized ligands inside their proteins by achieving RMSD values lower than two. Moreover, molecular docking study revealed that compound 4, and 5 are promising steroidal derivatives as anti-cancer drugs. Further on, the cytotoxic activity of the selected steroidal derivatives was tested against leukemia cell line using MTT assay. The results revealed that compound 4, and 5 were potential cytotoxic agents against THP-1 cells (IC₅₀s were 44.67 μ M, and 46.77 μ M, respectively), these results are in agreement with the molecular docking study.

Keywords: Drug Design, Steroid Derivatives, Heterocyclic, Anti-Cancer, Molecular Docking, Leukemia

26. Role of estrogen receptors in modulating aldosterone biosynthesis and blood pressure. *Gian Paolo, Rossi Brasilina, Caroccia Teresa M.Seccia.* Steroids, Vol 152, December 2019, P: 108486.

Abstract

Blood pressure is lower in premenopausal women than in age-matched men; after menopause blood pressure values and the prevalence of hypertension show opposite trends indicating that estrogens contribute to maintaining normal blood pressure values in women. In experimental studies menopause increases aldosterone levels, an effect alleviated by estrogen treatment. We have recently discovered a role of estrogen receptors (ER) in controlling aldosterone biosynthesis in the human adrenocortical zona glomerulosa, which expresses both the classical ER α and β receptors and G protein-coupled estrogen receptor (GPER). We have also identified that GPER mediates an aldosterone-induced aldosterone response. We found that 17 β -estradiol exerts a dual effect: it blunts aldosterone production via ER β , but displays a potent aldosterone secretagogue effect via GPER activation after ER β blockade. Thus, in premenopausal women high estrogen levels might tonically blunt aldosterone synthesis via ER β , thereby maintaining normal blood pressure; after menopause loss of this estrogen-mediated inhibition can contribute to increasing blood pressure via GPER-mediated aldosterone release. The additional findings that GPER mediates an aldosterone-induced stimulation of aldosterone biosynthesis and that GPER predominates in aldosterone-producing adenomas strongly involves this receptor in the pathophysiology of primary aldosteronism. Our purpose here was to provide an update on estrogen receptor function in the normal adrenal cortex and its relevance for the sex differences in blood pressure in light of the newly discovered role of GPER in regulating aldosterone synthesis. The implications of the novel knowledge for the treatment of estrogen-dependent malignancies with ER modulators are also discussed.

Keywords: Estrogens, Estrogen Receptors, Blood Pressure, Menopause, Aldosterone GPER

27. Hypoxia induced cancer stem cell enrichment promotes resistance to androgen deprivation therapy in prostate cancer. *Debbie O'Reilly, Patricia Johnson, Paul J. Buchanan.* *Steroids*, Vol 152, December 2019, P: 108497.

Abstract

Androgen deprivation therapy (ADT) is the main treatment to prolong survival in advanced stage prostate cancer (PCa) but associated resistance leads to the development of terminal castrate resistant PCa (CRPC). Current research demonstrates that prostate cancer stem cells (PCSC) play a critical role in the development of treatment resistance and subsequent disease progression. Despite uncertainty surrounding the origin of these cells, studies clearly show they are associated with poorer outcomes and that ADT significantly enhances their numbers. Here we highlight how activation of HIF signalling, in response to hypoxic conditions within the tumour microenvironment, results in the expression of genes associated with stemness and EMT promoting PCSC emergence which ultimately drives tumour relapse to CRPC. Hypoxic conditions are not only enhanced by ADT but the associated decrease in AR activation also promotes PI3K/AKT signalling which actively enhances HIF and its effects on PCSC's. Furthermore, emerging evidence now indicates that HIF-2 α , rather than the commonly considered HIF-1 α , is the main family member that drives PCSC emergence. Taken together this clearly identifies HIF and associated pathways as key targets for new therapeutic strategies that could potentially prevent or slow PCSC promoted resistance to ADT, thus holding potential to prolong patient survival.

Keywords: Prostate Cancer, Androgen Deprivation Therapy, Cancer Stem Cells, hypoxia, HIF-2 α

Family Planning

28. Family Formation Goals Among Sexual and Gender Minority Individuals in Urban India. *Jessamyn Bowling, Megan Simmons, Brian Dodge, Vikram Sundarraman, Brindaa Lakshmi, Sivakumar T. Dharuman, Debby Herbenick.* *Studies in Family Planning*, Vol 50, No.4, Dec 2019, P: 357-373

Abstract

Sexual and Gender Minority (SGM) individuals' (nonheterosexual or noncisgender) desires and intentions to form families have been under-researched. Further, research on family formation among SGM individuals is even more scant in India. Family formation, a significant milestone for many individuals, has important implications for overall health. Using data from interviews (n=25) and focus group discussions (8 participants) with SGM individuals in Bangalore, Chennai, and Kolkata, we explore desires and intentions related to parenting. Pressure to have children was ubiquitous, though participants' parenting-related desires varied. Participants considering parenting noted many priorities including their financial stability, relationships with partners, and the legality and legitimacy of their partnerships. Adoption and assisted biological reproduction (e.g., IVF) were the preferred methods of family formation. Experiences and expectations of stigma for themselves and their children shaped participants' limited control over parenting-related decisions. However, they exerted agency as they navigated achieving their ideals for family formation.

Keywords: Sexual and Gender Minority, Family Planning, Family Formation

Maternal and Child Health

29. What Explains the Decline in Neonatal Mortality in India in the Last Three Decades? Evidence from Three Rounds of NFHS Surveys. *Abhishek Singh, Kaushalendra Kumar, Ashish Singh.* *Studies in Family Planning*, Vol 50, No.4, Dec 2019, P: 337-355.

Abstract

Identifying the factors that have contributed to recent declines in neonatal mortality in India may help determine which policies and programs are most likely to facilitate further reductions. We use data from the 1992–93, 2005–06, and 2015–16 National Family Health Surveys (NFHS) to examine trends in neonatal mortality in India. We use multivariable decomposition to estimate the contribution of different factors to the change in neonatal mortality in India in the last three decades. When limited to most recent births in the 1–47 months preceding the surveys, 70 percent of the decline in neonatal mortality from 1992–2016 is due to changes in utilization of maternal- and child-care program factors and distribution of household, mother's, and child's characteristics. Improvement in "mother's schooling" and increase in utilization of "at least two tetanus toxoid injections" contributed the most followed by the increase in use of "at least three antenatal-care visits" and "clean fuel for cooking." The change in distribution of "birth order" also contributed significantly to the decline in neonatal mortality. Change in the benefits of "access to improved water," "delivery in a medical facility," and "mother's schooling" has led to a decline of 3 points, 2 points, and 1 point, respectively. More investments in maternal- and child-health programs (including family planning) and providing clean fuel for cooking are likely to pay higher dividends.

Keywords: Neonatal Mortality, National Family Health Surveys, Maternal and Child Health, India

Women's Health

30. Women's Perspectives on Postpartum Intrauterine Devices in Tanzania. *Sarah Huber-Krum, Kristy Hackett, Leigh Senderowicz, Erin Pearson, Joel M. Francis, Hellen Siril, Nzovu Ulenga, Iqbal Shah.* *Studies in Family Planning*, Vol 50, No.4, Dec 2019, P: 317-336

Abstract

Despite the numerous benefits of the postpartum copper intrauterine device (PPIUD), which is inserted within 48 hours after giving birth, it is underutilized in many resource-constrained settings, including Tanzania. We conducted in-depth interviews with 20 pregnant women who received contraceptive counseling during routine antenatal care in 2016–2017 and 27 postpartum women who had a PPIUD inserted in 2018 to understand reasons for use versus non-use and continuation versus discontinuation. Primary motivators for using a PPIUD included: convenience, effectiveness, perceived lack of side effects, and duration of pregnancy protection. Barriers to use included: fear of insertion, concerns related to sexual experiences post-insertion, and limited knowledge. Women who had a PPIUD inserted continued use when their expectations matched their experience, while discontinuation resulted from unexpected expulsion and experience of unanticipated side effects. Frequent follow-up and guidance on side-effect management influenced women's decisions to continue use. To support uptake and continued utilization of the PPIUD, postpartum contraceptive counseling should explicitly address side effects and risk of expulsion.

Keywords: PPIUD, Postpartum Intrauterine Devices, Women Health, Tanzania

31. Differences in Life-Saving Obstetric Hemorrhage Treatments for Women with Abortion Versus Nonabortion Etiologies in Tanzania. *Lauren Smith, Michelle Skaer Therrien, Kim G. Harley, Selemani Mbuyita, Zacharia Mtema, Iddajovana Kinyonge, Robert Tillya, Godfrey Mbaruku, Suellen Miller.* *Studies in Family Planning*, Vol 50, No.4, Dec 2019, P: 375-393

Abstract

Complications from unsafe abortion are among the major causes of preventable maternal morbidity and mortality, which may be compounded by delays and disparities in treatment. We conducted a secondary analysis of women with symptoms of hypovolemic shock secondary to severe obstetric hemorrhage in Tanzania. We compared receipt of three lifesaving interventions among women with abortions versus other maternal hemorrhage etiologies. Interventions included: non-pneumatic anti-shock garment (NASG) (N = 393), blood transfusion (N = 249), and referral to a higher-capacity facility (N = 131). After controlling for severity of disease and other confounders, women with abortion-related hemorrhage and shock had 78 percent decreased odds of receiving NASG ($p < 0.001$) and 77 percent decreased odds of receiving a blood transfusion ($p < 0.001$) compared to women with hemorrhage and shock from other etiologies. Our findings suggest that, in Tanzania, women with abortion-related hemorrhage received lower quality of care than women with other hemorrhage etiologies.

Keywords: Obstetric Hemorrhage, Maternal Morbidity And Mortality, Nonabortion Etiologies, Abortion