

Oral health status and treatment needs of children with special health care needs in rural and urban areas of Hyderabad – A cross sectional study

B. Tapaswi Singh¹, Pranitha V², Dwijendra K S², Nagarjuna G²,
Naseemoun Shaik², Kavya R³

¹Department of Dental Surgery, Gandhi Medical College and Hospital, Hyderabad, Telangana, ²Department of Pedodontics and Preventive Dentistry, MNR Dental College and Hospital, Sangareddy, Telangana, ³Private Clinical Pediatric Dentist, Tharun Super Speciality Dental Hospital, Hyderabad, Telangana, India

ABSTRACT

Aim: The aim of the cross-sectional study was to ascertain the oral health status and treatment needs of special health care need children of age group 3–16 years in rural and urban areas of Hyderabad, Telangana, India. **Materials and Method:** To assess and compare the caries status, oral health status, oral hygiene measures, diet and treatment needs in rural and urban population. The data collected was processed and analyzed using the SPSS statistical software program. **Results:** Among 1000 subjects in rural and urban population highly significant difference was observed for Oral hygiene aids ($P < 0.003$) and for DMFT ($P < 0.008$) and no significant difference for dmft ($P > 0.26$). OHIs status showed no difference in primary and permanent in both rural and urban population ($P > 1$). Filled and missed were in DMFT, dmft was very low even though there were carious tooth in study population. Most of the children in rural and urban population required varied treatment needs like oral prophylaxis, restoration, pulp therapy, crowns and extractions. **Conclusion:** High prevalence of dental caries and the need for restorative care was noted in these children emphasizing the necessity of change of attitude towards oral health and improved oral care by repeated counselling of parents by primary health care physicians.

Keywords: Children, Diet, Oral health, Rural, Urban

Introduction

Children play a vital role as the present and future of the nation. The development of child is critical to the society and it is important to understand physical, psychological, social, cognitive, emotional abilities of the child.^[1]

People of India as per census 2011 (2016 updated) of differently abled forms 2.21% of the total population (121 Cr). Among

the differently abled population 56% (1.5 Cr) are males and 44% (1.18 Cr) are females of which 69% are from rural areas while the remaining 31% reside in urban areas.^[2]

In the Rights of persons with disability (RPWD) Act, 2016, the list has been expanded from 7 to 21 conditions and it now also includes cerebral palsy, dwarfism, muscular dystrophy, acid attack victims, hearing, speech and language disability, specific learning disabilities, autism spectrum disorders, chronic neurological disorders such as multiple sclerosis and Parkinson's disease, blood disorders such as haemophilia, thalassemia, and sickle cell anaemia, and multiple disabilities.^[3]

Address for correspondence: Dr. Pranitha V,
Dept of Pedodontics and Preventive Dentistry, MNR Dental College
& Hospital, Sangareddy, Telangana- 502294, India.
E-mail: pranithavallala@gmail.com

Received: 22-06-2020

Revised: 08-09-2020

Accepted: 08-10-2020

Published: 31-12-2020

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1234_20

How to cite this article: Singh BT, Pranitha V, Dwijendra KS, Nagarjuna G, Shaik N, Kavya R. Oral health status and treatment needs of children with special health care needs in rural and urban areas of Hyderabad – A cross sectional study. J Family Med Prim Care 2020;9:6158-63.

The nomenclature of mental retardation is replaced by intellectual disability which is defined as “a condition characterized by significant limitation both in intellectual functioning (reasoning, learning, problem-solving) and in adaptive behaviour which covers a range of every day social and practical skills including specific learning disabilities and autism spectrum disorders.” The Act provides an elaborate definition of mental illness which is “a substantial disorder of thinking, mood, perception, orientation, or memory that grossly impairs judgment, behaviour, and capacity to recognize reality or ability to meet the ordinary demands of life but does not include retardation which is a condition of arrested or incomplete development of mind of a person, especially characterized by sub-normality of intelligence.” Persons with benchmark disabilities are defined as those with at least 40% of any of the above disability. Person with disability having high support needs are those who are certified as such under section 58 (2) of the Act (Gov. of India 2005).^[4]

Children are unique. Disability is a perception. Children with special health care needs encounter oral health problems which is a great challenge to deliver the oral hygiene care by parents and care givers. However, as a medical professionals, we must realize that “A child with special needs will inspire you to be a special kind of person”.

Prevention of dental diseases in special health care needs individuals is of paramount importance as management of these children creates anxiety among health professionals and requires specialized knowledge, training, increased awareness and accommodative measures as the individuals present unique challenges.^[5]

Materials and Methodology

A total of 1000 special children from rural and urban population of age groups 3–16 years were included in study to assess their oral health status. The study was reviewed and approved by the ethical review committee of MNR Dental College and Hospital, Hyderabad. Consent and permission for examination were obtained from the parents and also from the institutions to collect the demographic data and oral health status.

A specific proforma was used in the study. The first part of the proforma sought information on the individual’s identity, age and sex, type of disability, IQ level, cooperation and medical history along with occupation of the parent. These were obtained from the child’s medical reports, questionnaire filled by parent or guardian. Children were categorized based on their intelligence quotient (IQ) as mild, moderate and severe mental retardation available from their records.

The second part of the proforma had the clinical oral examination of Oral hygiene (using OHI-S index), dental caries (using DMFT/deft index). Clinical examination was carried out under torch light with children seated on an ordinary chair using mouth mirror and WHO probe by single examiner.

The collected data was tabulated and analysed statistically by using Chi Square test, t-test. The data analysis was performed using SPSS version 20.0.

Chi Square test, t-test were used to assess associations between categories.

Results

A total of 1000 children aged 3–16 years were examined to assess oral health status and treatment needs in rural and urban areas by using WHO oral assessment form. [Graphs 1 and 2]

Majority of children, 96.4% of urban population were using toothbrush compared to rural 91.8% and the difference was statistically significant ($P < 0.003$) [Table 1]. Brushing frequency in majority of children was once a day, with toothbrush and toothpaste [Tables 2 and 3]. 100% of the children in urban population had never visited a dentist even once as compared to rural population of which 1.8% visited once and 0.8% more than twice. The difference between the two is statistically highly significant ($P < 0.001$) [Table 4]. Decay prevalence in permanent teeth was higher in rural with a mean value 0.51 compared to urban population and the difference is statistically significant ($P < 0.01$).

Table 1: Comparison of Brushing Aids between urban and rural group

	Location		Brushing Aids		Total	P
			Tooth brush	Finger		
Urban	<i>n</i>		482	18	500	0.003* (S)
		%	96.4	3.6	100	
	<i>n</i>		459	41	500	
		%	91.8	8.2	100	
Total			941	59	1000	

Table 2: Comparison of frequency of brushing between urban and rural group

	Location		Frequency of brushing		Total	P
			Once a day	2 or more times a day		
Urban	<i>n</i>		500	0	500	0.24 (NS)
		%	100	0	100	
	<i>n</i>		497	3	500	
		%	99.8	0.6	100	
Total			997	3	1000	

Table 3: Comparison of tooth paste usage between urban and rural group

	Location		Tooth paste		Total	P
			Yes	No		
Urban	<i>n</i>		500	0	500	Cannot be computed
		%	100	0	100	
	<i>n</i>		500	0	500	
		%	100	0	100	
Total			1000	0	1000	

However, there was no significance ($P > 0.25$) in the prevalence of decay of primary teeth when compared between urban and rural children [Table 5]. There were no missing and filled teeth in both the dentitions in both urban and in rural population and majority of special children had supernumerary and retained teeth. Majority of rural and urban population who restricted sugars had low caries prevalence in both the dentitions and this difference is highly statistically significant ($P < 0.05$) [Table 6]. Oral hygiene status of urban population among 194 examined was Good in 41.2%, Fair (52%) and Poor (6.2%) and in rural among 196 Good (41.3%), Fair (52.5%), Poor (6.1%). Oral hygiene status of majority population in rural and urban population was fair oral hygiene in both primary and permanent dentition and the difference was statistically not significant ($P > 1$) [Tables 7 and 8].

About 25.6% of rural population did not have any treatment needs as compared to 22.2% of urban population which was not significant. However, other treatment needs like oral prophylaxis, single surface filling, resin restoration and pulp therapies were needed in both the groups, difference which was not significant ($P < 0.05$). However, there was a statistically difference between two groups in treatment needs relating to two surface restorations, extractions and crowns. [Table 9].

Discussion

Oral health is a major concern for individuals with disability and poor oral health is factor of co-morbidity when associated with systemic disease.^[6] It has been reported that dental treatment is the greatest unattended health need of these children and with this view point, a study was conducted to assess the oral health status and treatment needs. The study included oral health survey design utilizing modified WHO oral health assessment proforma 2013 whereas modified WHO oral health assessment proforma (1997) was used by Purohit *et al.* (2010).^[7]

Totally, 96.4% of urban population were using toothbrush compared to 91.8% of the rural population. 100% of urban population brushed once a day with toothbrush compared to 99.8% in rural population. Results are in accordance with the other studies.^[8-11] This represents the awareness of urban population unseen in rural. 100% of urban population had never visited a dentist compared to 97.4% in rural population. The results are in accordance with the other study, where significantly higher proportion of special needs children did not receive any dental care.^[7] This can be due to lack of problems among parents and poor access to dental care for these children. Overall, caries prevalence of permanent teeth was higher in rural compared to urban population. This is due to lack of awareness, severity of disabilities can act as barrier to oral care, higher cost of dental services, no parental and caregiver counselling regarding oral health and dietary habits. Whereas, caries prevalence of primary teeth in the urban population is more when compared to rural. High caries prevalence in the study is in accordance with other studies.^[11-13] This can be attributed to differences in dietary practices in both the groups. There is not much difference between rural and urban population in relation to decayed teeth, which can

Table 4: Comparison of dental visit between urban and rural group

Location	Urban	Dental visit			Total	P
		Once	4 times	Never visited		
	<i>n</i>	0	0	500	500	0.001* (S)
	%	0	0	100	100	
	Rural	<i>n</i>	9	4	487	500
		%	1.8	0.8	97.4	100
Total			9	4	987	1000

Table 5: Comparison of sugar consumption and DMFT/dmft between urban and rural population

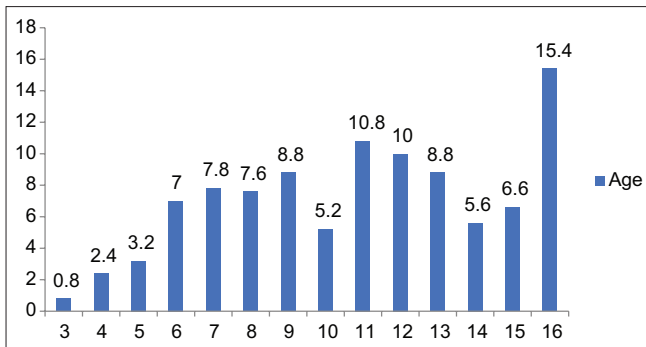
Diet	<i>n</i>	Mean	Std. deviation	Std. Error Mean	P	
D	Restricted	532	0.06	0.391	0.017	0.000 (S*)
	Unrestricted	466	0.84	1.554	0.072	
M	Restricted	533	0.00	0.000	0.000	0.285 (NS)
	Unrestricted	466	0.00	0.093	0.004	
F	Restricted	533	0.00	0.000	0.000	0.032 (NS)
	Unrestricted	466	0.01	0.092	0.004	
DMFT	Restricted	533	0.06	0.391	0.017	0.000 (S*)
	Unrestricted	466	0.85	1.553	0.072	
d	Restricted	533	0.13	0.665	0.029	0.000 (S*)
	Unrestricted	466	0.90	1.927	0.089	
dmft	Restricted	533	0.13	0.665	0.029	0.000 (S*)
	Unrestricted	466	0.91	1.945	0.090	
f	Restricted	533	0.00	0.000	0.000	0.130 (NS)
	Unrestricted	466	0.01	0.196	0.009	
m	Restricted	533	0.00	0.000a	0.000	0.000 (S*)
	Unrestricted	466	0.00	0.000a	0.000	

Table 6: Comparison of no of retained teeth, DMFT and dmft between urban and rural population

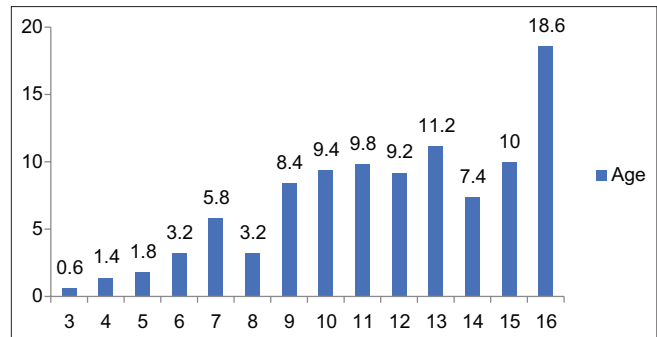
	Location	<i>n</i>	Mean	Std. deviation	P
No of Retained	Urban	500	0.18	0.71	0.89 (NS)
	Rural	500	0.19	0.72	
D	Urban	499	0.33	0.93	0.01*(S)
	Rural	500	0.51	1.35	
M	Urban	500	0.00	0.00	0.31 (NS)
	Rural	500	0.00	0.09	
F	Urban	500	0.00	0.05	0.31 (NS)
	Rural	500	0.01	0.08	
DMFT	Urban	500	0.33	0.93	0.008*(S)
	Rural	500	0.52	1.36	
D	Urban	500	0.54	1.42	0.25 (NS)
	Rural	500	0.43	1.49	
M	Urban	500	0.00	0.000	Cannot be computed
	Rural	500	0.00	0.000	
F	Urban	500	0.01	0.13	1 (NS)
	Rural	500	0.01	0.13	
Dmft	Urban	500	0.54	1.43	0.26 (NS)
	Rural	500	0.44	1.50	

Statistical Analysis : Student t-test

be related to lack of awareness, improper oral hygiene, mid meal snacks and could also be due to the lower calcium content of



Graph 1: Cluster of bar diagrams for distribution of Urban population according to age (3-16 years)



Graph 2: Cluster of bar diagrams for distribution of Rural population according to age (3-16 years)

Table 7: Comparison of OHIS in primary dentition between urban and rural group

Location		n	Primary			Total	P
			Good	Fair	Poor		
Urban	n	80	102	12	194	1 (NS)	
	%	41.2	52.5	6.1	99.8		
Rural	n	81	103	12	196		
	%	41.3	52.5	6.1	99.9		
Total		161	205	24	390		

Table 8: Comparison of OHIS in permanent dentition between urban and rural group

Location		n	Permanent			Total	P
			Good	Fair	Poor		
Urban	n	112	266	75	453	0.99 (NS)	
	%	24.7	58.7	16.5	99.9		
Rural	n	113	265	75	453		
	%	24.9	58.4	16.5	99.8		
Total		225	531	150	906		

Table 9: Comparison of Treatment needs in primary and permanent dentition between urban and rural group

Treatment need		Urban (500)	Rural (500)	P
No Treatment	n	111	128	0.23 (NS)
	%	22.2	25.6	
Oral Prophylaxis	n	365	340	0.09 (NS)
	%	73	68	
1 Surface Filling	n	61	72	0.35 (NS)
	%	12.2	14.4	
2 Surface Filling	n	1	24	<0.001 S*
	%	0.2	4.8	
Resin Restoration	n	9	12	0.66 (NS)
	%	1.8	2.4	
Pulp Therapy & Restoration	n	45	56	0.29 (NS)
	%	9	11.2	
Crowns	n	73	42	0.003S*
	%	14.6	8.4	
Extraction	n	32	53	0.02S*
	%	6.4	10.6	

deciduous teeth and structural differences that may increase caries susceptibility in deciduous teeth.

In present study, decayed (D) component was found to be more compared to filled teeth the mean value was 0.01 indicating unavailable treatment benefits. No missing teeth were seen in both the population instead there were only retained teeth. It can be rationalized as due to physical and intellectual disability which aid in overprotection of children leading to negligence towards treatment and priority for the general health condition over oral health or poor access to dental facilities. This result was in accordance with most of the studies conducted in children with special needs.^[14-16]

Majority of rural and urban population who restricted sugars had low caries prevalence in both the dentitions and this difference is highly statistically significant ($P < 0.05$). The finding is in agreement with other study which reported 83.4% of the children from special schools and 72.6% in the control group were consuming sugar two times between meals on the previous day; the difference was statistically significant ($P < 0.001$).^[7] According to the National Oral Health Survey in India (2002–2003), for both 5- and 12-year age groups, it was reported that only 24–30% of the respondents consumed sugar once on the previous day, while 14–15% had consumed sugar two or more times. This is why the high caries prevalence was found to be statistically significant between both age groups ($P < 0.01$).

Oral Hygiene-Simplified given by Greene Jc, Vermillion JK was employed for permanent dentition, while for primary dentition modified form of oral hygiene index-simplified was employed. 52.5% each in both rural and urban population in primary dentition and 58.7% each in both rural and urban population in permanent dentition was fair oral hygiene and the difference is statistically not significant ($P > 1$). Fair oral hygiene was also observed in the following studies.^[17-20] whereas poor oral hygiene was reported in other studies.^[10,11,13] Lack of knowledge and poor motor functions affects dexterity and their accountability to understand and assume responsibility for maintenance of oral hygiene.

Among 500 population in each rural and urban population, 22.2% in urban and 25.6% in rural population presented with no treatment needs ($P = 0.23$). 73% of urban population and 68%

of rural population require oral prophylaxis ($P = 0.09$). 12.2% in urban population and 14.4% in rural population require one surface fillings ($P = 0.35$). 0.2% of urban population and 4.8% of rural population needed two surface fillings ($P < 0.001$), the difference which was statistically significant. 1.8% of urban population and 2.45 of rural population require resin restoration ($P = 0.66$). 9% of urban population and 11.2% of rural population needed pulp therapy ($P = 0.29$). 14.6% in urban population and 8.4% of rural population needed crowns ($P = 0.003$). 6.4% of urban population and 10.6% of rural population needed extraction ($P = 0.02$) “No treatment”, “oral prophylaxis”, “Pulp therapy” and resin restorations had shown no statistical difference ($P > 0.05$). However treatment needs for “two surface restorations,” “extraction and crowns” were statistically significant between two groups ($P < 0.05$). The following studies differ from the present study in relation to treatment needs.^[15,19,21]

Comparison of treatment needs among rural and urban population rural population demands higher needs for the treatment. In the present study treatment needs requirement was oral prophylaxis, one surface filling, crowns, extractions and pulp therapy. This can be rationalized as lack of knowledge and awareness among parents and care givers, poor socioeconomic status of the parents and guardians, low priority, lack of access for early and regular oral health check-up and prompt treatment and cost of treatment.^[13,22-24]

Conclusion

1. Children with restricted sugars had low caries prevalence in both urban and rural population.
2. Tooth brushing practices and frequency is more in urban population.
3. Treatment needs are higher in rural population for permanent teeth.

There was a difference in oral hygiene practices, its frequency and treatment needs in urban and rural population in the study suggesting the need of collaboration of medical and dental fraternity. Primary health care providers can play a pivotal role as oral health facilitators by spreading knowledge among parents and care givers about home care, non-invasive preventive measures such as oral hygiene training, dietary counselling and usage of fluoride dentrifices. The need of the hour is to redefine goals of dental care to reduce burden of the disease thus improving oral health related quality of life.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Newacheck PW, Marchi K, McManus M, Fox H. New estimates of children with special health care needs and implications for the state children's health insurance program. Maternal & Child Health Policy Research Center Fact Sheet No. 4, March 1998.
2. Census of India. Disabled Population by Type of Disability, Age, Sex and Type. New Delhi: Registrar General Office; 2011. Available from: <https://enabled.in/wp/disabled-population-in-india-as-per-census-2011-2016-updated/>.
3. Lewis C, Robertson AS, Phelps S. Unmet dental care needs among children with special health care needs: Implications for the medical home. *Pediatrics* 2005;116:426-31.
4. Gov. of India. Sample Registration System Statistical Report 2003, Report No. 2, 2005.
5. Kowash M. Oral Health of Children with Special Health Care Needs (SHCN). *JSM Dent* 2017;5:1083.
6. Hennequin M, Moysan V, Jourdan D, Dorin M, Nicolas E. Inequalities in oral health for children with disabilities: A French national survey in special schools. *PLoS One* 2008;3:e2564. doi: 10.1371/journal.pone.0002564.
7. Purohit M, Acharya S, Bhat M. Oral health status and treatment needs of children attending special schools in South India: A comparative study. *Spec Care Dentist* 2010;30:235-41.
8. Siddibhavi MB. Oral health status of handicapped children attending various special schools in Belgaum city Karnataka. *WebmedCentral Epidemiology* 2012;3:WMC003061.
9. Liu Z, Yu D, Luo W, Yang J, Lu J, Gao S, *et al.* Impact of oral health behaviors on dental caries in children with intellectual disabilities in Guangzhou, China. *Int J Environ Res Public Health* 2014;11:11015-27.
10. Bennadi D, Konekari V, Maurya M, Reddy V, Satish G, Reddy CV. Oral hygiene negligence among institutionalized mentally disabled children in Mysore city -A call for attention. *J Family Med Prim Care* 2020;9:2045-51.
11. Gadiyar A, Gaunkar R, Kamat A, Kumar A. Influence of intellectual disabilities on oral health among children attending special schools in Goa: A cross-sectional study. *J Indian Assoc Public Health Dent* 2020;18:31-4.
12. Dheepthasri S, Taranath M, Garla BK, Karuppaiah M, Sangeeta U. Oral health status and treatment needs among intellectually disabled in Madurai. *J Adv Oral Res* 2018;9:45-8.
13. Astha C, Arun C, Chayan J, Trivedi A, Swarnkar SK, Trivedi S. Oral health status and treatment need among mentally disabled individuals in Indore city, central India. *IJSR* 2020;9:1.
14. Pannu KP, Galhotra V, Bhalla S, Ahluwalia P. Oral health status of special children in Chandigarh. *Baba Farid Univ Dent J* 2011;2:31-4.
15. Mehta A, Gupta R, Mansoob S, Mansoori S, Shahnaz. Assessment of oral health status of children with special needs in Delhi, India. *RSBO(Online)*. 2015;12:244-51.
16. Sandeep V, Kumar M, Vinay C, Chandrasekhar R, Jyostna P. Oral health status and treatment needs of hearing impaired children attending a special school in Bhimavaram, India. *Indian J Dent Res* 2016;27:73-7.

17. Oredugba FA. Comparative oral health of children and adolescents with cerebral palsy and controls. *J Disabil Oral Health* 2011;12:81-7.
18. Oliveira JS, Prado Junior RR, de Sousa Lima KR, de Oliveira Amaral H, Moita Neto JM, Mendes RF. Intellectual disability and impact on oral health: A paired study. *Spec Care Dentist* 2013;33:262-8.
19. Jain A, Thakur S, Singhal P, Thakur P. Oral health status and treatment needs of children and young adults attending a day centre for individuals with special health care needs in Shimla. *Int J Dent Med Res* 2015;1:32-6.
20. Supriya A, Shenoy R, Jodalli P, Sonde L, Pasha I. Assessment of oral health status and comparative evaluation of different methods of oral health education in children with special health care needs. *Indian J Public Health Res Dev* 2019;10:552-6.
21. Eigbobo JO, Osagbemi BB, Okolo NI, Umanah AU. Oral health status and treatment needs of individuals with special health care needs in Port Harcourt, Nigeria. *Saudi J Oral Dent Res* 2017;2:147-54.
22. Rao DB, Hegde AM, Munshi AK. Caries Prevalence amongst handicapped children of South Canara district, Karnataka. *J Indian Soc Pedod Prev Dent* 2001;19:67-73.
23. Shivakumar KM, Patil S, Kadashetti V, Raje V. Oral health status and dental treatment needs of 5-12-year-old children with disabilities attending special schools in Western Maharashtra, India. *Int J App Basic Med Res* 2018;8:24-9.
24. Suryarao PS, Goankar NN, Hariyani PV, Wable D, Shashikiran ND. Comparison between oral health status of institutionalised and home stay disabled children in western Maharashtra region. *J Nat Sci Biol Med* 2020;11:179-82.