ORIGINAL ARTICLE

Pattern of Dental Diseases Among the Patients Reporting to Dental Hospitals at Kurram Agency, Federal Administrative Tribal Area, Pakistan: Multicenter Cross Sectional Survey

Sahib Ullah[1], Salma Ishaq[1], Zainab Bibi[1], Zainab Shah[2]

1. Khyber Medical University, Peshawar, Pakistan
2. Department of Oral Medicine, Sardar Begum Dental College, Peshawar, Pakistan

Abstract

Background: An essential element of general health is oral health which plays an important role in the quality of life. The public health problems associated with oral disease are a serious burden in Pakistan and other countries of the world. The most common diseases in man include dental diseases such as gingivitis, pulpitis and caries. The causes of oral diseases are primarily rooted in poor socioeconomic and physical environment; unhealthy lifestyles and oral health related behavior accordingly the action towards improvement of oral health should be directed towards modification of unhealthy environment and behaviors.

Objective: The main objective of the current study was to determine the pattern of dental diseases among the patients reporting to dental hospitals at Kurram Agency, Federal Administrative Tribal Area, Pakistan.

Materials and Methods: A hospital based cross sectional study to determine the pattern of dental diseases among patients reporting dental hospitals at Kurram Agency, Pakistan. The duration of the study is from 10th February, 2018 to 25th May, 2018. Our data collection is based on secondary data from the health records at hospitals and six months' (August 2017 to January 2018) data of each patient from the health records at all the three dental centers in Kurram Agency, Pakistan was collected.

Results: Among 1525 patients, 1064 (69.8%) were caries, 208(13.64%) were pulpitis, 107(7.02%) were gingivitis, 81(5.31%) were abscess, 39(2.56%) were pericoronitis and 26(1.70%) were malocclusion. Among 1525 patients, 852 (55.87%) were extractions, 91(5.97%) were fillings, 52 (3.41%) were scaling and 530 (34.8%) received medications. Highest frequency among the treatments were extractions followed by medications prescribed by the dental surgeons.

Conclusion: Caries was the most prevalent dental disease, almost every third patient reporting to the dental hospitals at Kurram Agency were diagnosed with caries, followed by pulpitis however Malocclusion and Pericoronitis was less common among patients than Gingivitis and Abscess.

Keywords: Dental diseases, Cross-sectional study, Dental treatments.

Introduction:

Oral health is a crucial component of overall well-being, significantly influencing an individual's quality of life. The oral cavity serves as a gateway for various diseases, and its unique features make it susceptible to diverse health issues Dental diseases, such as gingivitis, pulpitis, and caries, are among the most prevalent health concerns affecting individuals across diseases, and its unique features make it susceptible to diverse health issues diseases, and its unique features make it susceptible to diverse health issues.[1] Dental diseases, such as gingivitis, pulpitis, and caries, are among the most prevalent health concerns affecting individuals across all age groups and races. Dental diseases, such as gingivitis, pulpitis, and caries, are among the most prevalent health concerns affecting individuals across all age groups and races.[2]

Corresponding Author:
Zainab Shah
Department of Oral Medicine, Sardar Begum Dental College, Peshawar, Pakistan
Email: dr.zainabshah@gmail.com
Received: 7th May 2023
Revised: 10th June 2023
Accepted: 15th June 2023
DOI: https://doi.org/10.52442/jrcd.v4i1.77

While dental diseases may manifest as common issues like toothaches, their impact extends beyond mere discomfort, potentially affecting fundamental activities such as speaking, smiling, and chewing. If left undiagnosed and untreated, dental diseases can lead to severe complications, underscoring the importance of proactive oral health management.[2]
This study focuses on the pattern of dental diseases among patients seeking treatment in dental hospitals at Kurram Agency, Federal Administrative Tribal Area, Pakistan. Understanding the prevalence and characteristics of dental diseases in this region is essential for devising targeted preventive and therapeutic strategies.

The spectrum of dental diseases encompasses various conditions, each with distinct features and implications for public health. Dental caries, characterized by the destruction of enamel, dentine, or cementum, poses a significant public health challenge globally.[3,4] Dental plaque is difficult to control due to the resilience and rapid growth of certain microbes.[5] The prevalence and distribution of dental disorders vary across continents, highlighting the need for region-specific insights.[6]
Periodontal diseases, affecting the structures supporting teeth, range from mild gingivitis to severe bone loss. Gingivitis, a common inflammatory disease, can lead to periodontitis and, if untreated,

result in tooth loss. The association between periodontal diseases and systemic conditions emphasizes the importance of comprehensive oral health care.[7,8]

Pericoronitis, often associated with impacted third molars, presents as an acute inflammatory condition with symptoms like pain, swelling, and difficulty in swallowing. Timely intervention is crucial to prevent complications such as cellulitis or osteomyelitis.[9,10] Pulpitis, an inflammatory reaction of the pulp, may manifest as reversible or irreversible. Understanding the progression and symptoms of pulpitis is vital for accurate diagnosis and appropriate treatment.[3]
Dental abscesses, the culmination of inflammatory processes, can be localized in the gums (periodontal abscess) or the tooth root (periapical abscess). These conditions demand attention due to their potential to lead to systemic complications.[4]

Malocclusion, characterized by misalignment of teeth or dental arches, presents aesthetic and functional challenges. While not inherently unhealthy, malocclusion may warrant treatment based on dental health, aesthetic, or functional criteria.[11] Preventing dental diseases involves community-based interventions, individual measures, and targeted strategies for at-risk groups. Fluoridation, sealants, oral hygiene practices, and smoking cessation support contribute to comprehensive prevention efforts.[12]

The prevalence of dental diseases varies globally, with developed economies experiencing changes in disease patterns due to increased tooth retention among adults. Disparities persist, with socio-economic factors influencing disease prevalence and access to dental care.[13]

Research in Europe and America has elucidated patterns and trends in dental diseases, with a notable increase in demand for dental care among middle-aged and older adults. Socio-economic disparities persist, impacting vulnerable populations.[14,15] Late presentation of dental problems and a preference for extractions characterize oral health challenges in Africa and Asia, particularly among the poor. Limited access to dental services further exacerbates disparities in oral health outcomes.[16,17]

In Pakistan, dental caries and periodontal diseases are prevalent, posing significant challenges to public health. Despite efforts, oral health awareness and access to dental services remain suboptimal, especially among low-income populations.[18,19]
This study aims to explore and analyze the patterns of dental diseases, treatment trends, and demographic distribution among patients seeking dental care at hospitals in Kurram Agency, Federal Administrative Tribal Area, Pakistan

Materials and Methods

This descriptive cross-sectional study, falling under the category of descriptive epidemiological studies, focuses on assessing the prevalence of dental diseases among patients in Kurram Agency, Federal Administrative Tribal Area, Pakistan. The study duration spans from February 10, 2018, to May 25, 2018. Ethical clearance was obtained from the relevant institute, ensuring privacy and confidentiality. Permission to conduct the study was granted by the competent authorities at all dental centers in Kurram Agency.

The study encompasses Kurram Agency, located in the Federally Administered Tribal Areas, Pakistan, specifically the Kurram Valley region. The population, primarily Pashtun, follows Islam (Shia and Sunni). Notable tribes include Turi, Bangash, Mamozai, Muqbal, Orakzai, Zazai (JAJI), Mangal, Ghilzai, and Para Chamkani. The area hosts three government dental centers at Sadda (main center), Alizai (sub-center), and Parachinar (another sub-center).
All patients reporting to dental hospitals at Kurram Agency, Pakistan, were included in the study, regardless of age, gender, economic status, or ethnic background.

The study relies on secondary data collected from health records at the dental hospitals. Approval for data collection was secured from relevant authorities, and six months' (August 2017 to January 2018) data for each patient from all three dental centers in Kurram Agency were included. The study gathered six months' data from health records at all three dental hospitals in Kurram Agency, Pakistan.The main variable was the diagnosis of dental diseases from patient health records, with additional data collected on age, gender, and treatment details. Descriptive statistics were computed for sociodemographic variables, presenting mean, frequencies, and standard deviation. Data was visualized using graphs and frequency tables. Statistical analysis was performed using SPSS Version 22.0.
Analysis of the data collected from the dental hospitals records was done by using Statistical Package for Social Sciences (SPSS) version 22.

Results

In the following section results are given in detail.

i) Distribution of Diagnosis Among Patients:

The table 1 indicates the percentages of diagnosis of the patients. Among 1525 patients, 1064 (69.8%) were caries, 208(13.64%) were pulpitis, 107(7.02%) were gingivitis, 81(5.31%) were abscess, 39(2.56%) were pericoronitis and 26(1.70%) were malocclusion.

Table 1: Frequency table about the diagnosis of the research subjects.

Diagnosis	Frequency	Percent
Caries	1064	69.8
Pulpitis	208	13.6
Gingivitis	107	7.0
Abscess	81	5.3
Pericoronitis	39	2.6
Malocclusion	26	1.7
Total	1525	100.0

ii) Distribution Of Treatments Among Patients

Table 2 presents treatment given to the patients by dental surgeons during the course of six months. Among 1525 patients, 852 (55.87%) were extractions, 91(5.97%) were fillings, 52 (3.41%) were scaling and 530 (34.8%) received medications. Highest frequency among the treatments were extractions followed by medications prescribed by the dental surgeons.

Table 2: Frequency table about the Treatment of the research subjects.

Treatment	Frequency	Percentage
Extraction	852	55.9
Filling	91	6.0
Scaling	52	3.4
Medication	530	34.8
Total	1525	100.0

iii) Age-wise Distribution of Diagnosis in Patients

Among the 1525 patients. In less than 1-year patients, only 2 patients were diagnosed with caries and there was no other diagnosis whereas among 31 patients of age 1 to 4 years, 25 have caries, 3 have pulpitis, 2 have abscess and 1 have pericoronitis and there was no gingivitis and malocclusion patient. 298 patients were reported in the age group of 5 to 14 years, among which the frequency of caries was 223, pulpitis frequency was 35, gingivitis was in 13 patients, 13 patients reported with abscess, the frequency of pericoronitis was 5 and malocclusion was 4. 864 patients were reported in the patients of age 15 to 49 years among which the frequency of caries, pulpitis, gingivitis, abscess, pericoronitis and malocclusion was 581, 125, 66, 46, 28 and 18 respectively. Among 1525 patients, the frequency of patients having age greater than 50 years were 330 among which 233 were reported with caries, 45 with pulpitis, 23 with gingivitis, 20 with abscess, 6 with pericoronitis and 4 were reported with malocclusion.

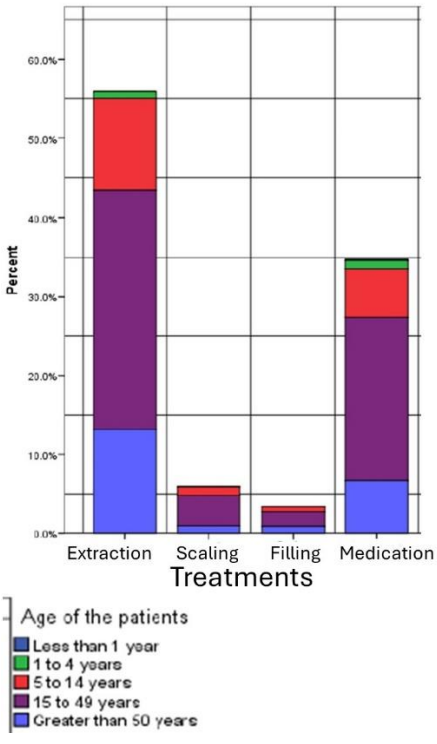
iv) Treatment Distribution Across Different Age Groups

Figure 1 shows the cross tabulation and clustered bar of treatment and age of the patients. In less than 1 year patients, only 2 patients were reported and they were treated by medication whereas among 31 patients of age 1 to 4 years, 13 were treated by extraction, 16 have given medication, only 2 patients were treated with filling and scaling each. 298 patients were reported in the age group of 5 to 14 years, among which the frequency of extraction was 177, filling frequency was 17, scaling was 9 and medication was given to 95 patients. 864 patients were reported in the patients of age 15 to 49 years among which the frequency of extraction, filling, scaling and Medication was 461, 59, 29 and 315 respectively. Among 1525 patients, the frequency of patients having age greater than 50 years were 330 among which 201 extractions were performed, 14 fillings, 13 scaling and 102 patients were treated with medication.

v) Gender-wise Distribution of Dental Treatment

The comparison between gender and treatment. The treatment provided to overall 761 female patients among which 436 were undergo extractions, 41 were fillings and 29 were scaling, and medications were prescribed to 255 females. However, the treatment given to overall 764 males among which 416 were extractions, 50 were fillings and 23 were scaling, and medications were prescribed to 275 males.

Figure 1: Treatment Availed according to age



vi) Diagnosis and Treatment Comparison

The comparison of diagnosis and treatment provided to the patients. There were 852 extractions performed among which 776 for caries, 23 for pulpitis, 2 for gingivitis, 4 for abscess, 21 for pericoronitis and 26 for malocclusion. 91 fillings were performed among which 80 were for caries, 7 for pulpitis, 3 for gingivitis, 1 for abscess, and none for pericoronitis and malocclusion. 52 scaling were performed among which 25 were for caries, 3 for pulpitis, 23 for gingivitis, only 1 for abscess, and none for pericoronitis and malocclusion. Medications were prescribed to 530 patients among which 183 times medication were for caries, 175 for pulpitis, 79 for gingivitis, 75 for abscess, 18 for pericoronitis and non for malocclusion.

Discussion:

The main objective of the current research study was to provide information for the prevalence and pattern of dental diseases among patients reporting to dental hospitals at Kurram Agency, Pakistan. Additionally, the current study investigated the treatment provided to the patients and also studied the age and gender wise distribution of the patients.

A hospital-based study conducted in India, the prevalence of dental caries was found to be maximum i.e. 54.54%, followed by gingivitis (37.62%). Abrasion was found in 3.82% of patients while malocclusion, pericoronitis and jaw fracture was seen in 3.05%, 0.53% and 0.44% of patients respectively.[20]

In a prospective study of dental disease pattern conducted in Srinagar hospital, found that dental caries (60.3%) was most common followed by periodontitis (18.3%) and gingivitis (11.3%). The retained deciduous comprised of 3.3% and other diseases which include fractured tooth and orthodontic problems comprised of another 6.3%.[15]

In a hospital-based study in Kolkata observed that 68.9% of the patients had dental caries, 50.8% had gingivitis and 32.2% had abrasion of teeth.[21]

In a study done among students of primary school of 12-year age in Zimbabwe, high prevalence of dental caries in both urban (59.5%) and rural (40.8%) children were observed.[22] In a community based study in Ethiopia among children of 7-14 years of age group the prevalence of dental caries was found to be 36.3%.[23]

In a study conducted in India, mostly (25.3%) the patients belonged to 30-39 years of age group, followed by 40-49 years (21.63%), 20-29 years (18.18%), 50-59 years (15.86%), 10-19 years (11.63%) while minimum (7.4%) number of patients belongs to ≥ 60 years of age. 51.54% of the patients were males while 48.46% were females .[20]

Prevalence of dental caries in a study conducted at deprived areas of Karachi was 52.7% in rural population and 47.3% in urban population.[24] A study in India by Maru et al in 2012 reported a high prevalence rate of more than 80% in rural population.[25]

Another survey done in rural areas of Africa reported 55.1% prevalence rate of dental caries in 18 years old and 74.4% in 34 years old.[26] Whereas the present study showed that among 1525 patients, 1064 (69.8%) were caries, 208(13.64%) were pulpitis, 107(7.02%) were gingivitis, 81(5.31%) were abscess, 39(2.56%) were pericoronitis and 26(1.70%) were malocclusion.

Among 1525 patients, 852 (55.87%) were extractions, 91(5.97%) were fillings, 52 (3.41%) were scaling and 530 (34.8%) received medications. Highest frequency among the treatments were extractions followed by medications prescribed by the dental surgeons.

In less than 1-year patients, only 2 patients were diagnosed with caries and there was no other diagnosis whereas among 31 patients of age 1 to 4 years, 25 have caries, 3 have pulpitis, 2 have abscess and 1 have pericoronitis and there was no gingivitis and malocclusion patient. 298 patients were reported in the age group of 5 to 14 years, among which the frequency of caries was 223, pulpitis frequency was 35, gingivitis was in 13 patients, 13 patients reported with abscess, the frequency of pericoronitis was 5 and malocclusion was 4. 864 patients were reported in the patients of age 15 to 49 years among which the frequency of caries, pulpitis, gingivitis, abscess, pericoronitis and malocclusion was 581, 125, 66, 46, 28 and 18 respectively. Among 1525 patients, the frequency of patients having age greater than 50 years were 330 among which 233 were reported with caries, 45 with pulpitis, 23 with gingivitis, 20 with abscess, 6 with pericoronitis and 4 were reported with malocclusion.

In less than 1-year patients, only 2 patients were reported and they were treated by medication whereas among 31 patients of age 1 to 4 years, 13 were treated by extraction, 16 have given medication, only 2 patients were treated with filling and scaling each. 298 patients were reported in the age group of 5 to 14 years, among which the frequency of extraction was 177, filling frequency was 17, scaling was 9 and medication was given to 95 patients. 864 patients were reported in the patients of age 15 to 49 years among which the frequency of extraction, filling, scaling and Medication was 461, 59, 29 and 315 respectively. Among 1525 patients, the frequency of patients having age greater than 50 years were 330 among which 201 extractions were performed, 14 fillings, 13 scaling and 102 patients were treated with medication.

Among 1525 patients, 761(49.9%) were females and 764(50.1%) were males. Among 1064 patients with caries, 528 were females and 536 were males however among 208 patients with pulpitis, 103 were females and 105 were males. The proportion of females and males among 107 gingivitis patients was 59 and 48 respectively while among 81 abscess, the proportion of females and males was 34 and 47

respectively. 25 were females and 14 were males among 39 patients with pericoronitis whereas 12 were females and 14 were males among 26 patients with malocclusion.

The treatment provided to overall 761 female patients among which 436 were undergo extractions, 41 were fillings and 29 were scalings and medications were prescribed to 255 females. However the treatment given to overall 764 males among which 416 were extractions, 50 were fillings and 23 were scalings and medications were prescribed to 275 males.

There were 852 extractions performed among which 776 for caries, 23 for pulpitis, 2 for gingivitis, 4 for abscess, 21 for pericoronitis and 26 for malocclusion. 91 fillings were performed among which 80 were for caries, 7 for pulpitis, 3 for gingivitis, 1 for abscess, and none for pericoronitis and malocclusion. 52 scaling were performed among which 25 were for caries, 3 for pulpitis, 23 for gingivitis, only 1 for abscess, and none for pericoronitis and malocclusion. Medications were prescribed to 530 patients among which 183 times medication were for caries, 175 for pulpitis, 79 for gingivitis, 75 for abscess, 18 for pericoronitis and non for malocclusion.

Limitations of this Study:

The current study, being a descriptive cross-sectional design, is limited in its ability to establish causal relationships, emphasizing prevalence determination and hypothesis generation. Longitudinal studies would offer more in-depth insights. Additionally, the hospital-based nature of the study may not fully represent the broader community, warranting the need for future community-based investigations to provide a more comprehensive understanding of the population.

Conclusion:

Dental Caries emerged as the predominant dental ailment among patients in Kurram Agency's dental hospitals, with nearly one-third of patients diagnosed. Pulpitis followed, while Malocclusion and Pericoronitis were less prevalent compared to Gingivitis and Abscess.

.

References:

1. Schour I, Sarnat BG. Oral manifestations of occupational origin. J Am Med Assoc. 1942;120(15):1197-207.
2. Sanu O, Oredugba F, Adebola R. Oral and dental diseases among children and adolescents in Kano, Nigeria. Pesqui Bras Odontopediatria Clín Integr. 2010;10(3):445-50.
3. Nimako-Boateng J, Owusu-Antwi M, Nortey P. Factors affecting dental diseases presenting at the University of Ghana Hospital. Springerplus. 2016;5(1):1-8.
4. Offenbacher S, Barros SP, Beck JD. Rethinking periodontal inflammation. J Periodontol. 2008;79:1577-84.
5. Ahmad SS, Siddiqui MF, Maqbool F, Ullah I, Adnan F, Albutti A, et al. Combating Cariogenic Streptococcus mutans Biofilm Formation and Disruption with Coumaric Acid on Dentin Surface. Molecules. 2024;29(2):397.
6. Petersen PE. Challenges to improvement of oral health in the 21st century–the approach of the WHO Global Oral Health Programme. Int Dent J. 2004;54:329-43.
7. Al-Khabbaz AK, Al-Shammari KF, Al-Saleh NA. Knowledge about the association between periodontal diseases and diabetes mellitus: contrasting dentists and physicians. J Periodontol. 2011;82(3):360-6.
8. Ramesh A, Thomas B. Correlation between leptin and the health of the gingiva: A predictor of medical risk. 2011.
9. Chu F, Li T, Lui V, Newsome P, Chow R, Cheung L. Prevalence of impacted teeth and associated pathologies-a radiographic study of the Hong Kong Chinese population. Hong Kong Med J. 2003.
10. Folayan M, Ozeigbe E, Onyejaeka N, Chukwumah N, Oyedele T. Non-third molar related pericoronitis in a sub-urban Nigeria population of children. Niger J Clin Pract. 2014;17(1):18-22.
11. Nemeth BR. Evaluation of shear/peel bond strengths of orthodontic attachments to moist and dry enamel 2000.
12. Campus G, Condò SG, Di Renzo G, Ferro R, Gatto R, Giuca MR, et al. National Italian Guidelines for caries prevention in 0 to 12 years-old children. Eur J Paediatr Dent. 2007;8(3):153-9.
13. Douglass CW, Sheets CG. PATIENTS'EXPECTATIONS FOR ORAL HEALTH CARE IN THE 21ST CENTURY. J Am Dent Assoc. 2000;131:3S-7S.
14. Houston WJB, Tulley WJ, Campbell A, Poswillo DE, Foster M. A textbook of orthodontics. (No Title). 1992.
15. Hassan S, Hassan AU. A Prospective study of dental disease pattern. Int J Clin Surg Adv. 2013;1(1):29-32.
16. Åstrøm AN, Masalu JR. Oral health behavior patterns among Tanzanian university students: a repeat cross-sectional survey. BMC Oral Health. 2001;1:1-7.
17. Bamise C, Bada T, Bamise F, Ogunbodede E. Dental care utilization and satisfaction of residential university students. Libyan J Med. 2008;3(3):1-6.
18. Nomaan N, Sarah A, Yawar H. z Ulfat B. Oral health status of patients visiting Islamic International Dental Hospital Ann Pak Inst Med Sci. 2012;8(1):27-30.
19. Organization WH. Neuroscience of psychoactive substance use and dependence: World Health Organization; 2004.
20. Garkoti P, Rawat C, Singh RK, Rawat V, Bartwal J, Goyal N. Pattern of dental diseases among patients attending outpatient department of dental: a hospital based cross-sectional study. Natl J Med Res. 2015;5(02):112-5.
21. Dasgupta U, Mallik S, Naskar S, Choudhury K, Paria B, Bhattacharya S. Dental problems and its epidemiological factors-a study on adolescent and adult patients attending dental OPD of a tertiary care hospital in Kolkata, India. J Dent Med Sci. 2013;5:1-7.

22. Mafuvadze BT, Mahachi L, Mafuvadze B. Dental caries and oral health practice among 12 year old school children from low socio-economic status background in Zimbabwe. Pan Afr Med J. 2013;14.

23. Ayele FA, Taye BW, Ayele TA, Gelaye KA. Predictors of dental caries among children 7-14 years old in Northwest Ethiopia: a community based cross-sectional study. BMC Oral Health. 2013;13:1-6.

24. Siddiqui TM, Wali A, Siddiqui SH, Heyat U, Nadeem M, Shamim M. An Epidemiological Study of Prevalence of Dental Caries and Periodontal Disease among Adults in Deprived Areas-Karachi. JOHR. 2013;4(1):3-7.

25. Maru AM, Narendran S. Epidemiology of dental caries among adults in a rural area in India. J Contemp Dent Pract. 2012;13(3):382-8.

26. Varenne B, Petersen PE, Ouattara S. Oral health status of children and adults in urban and rural areas of Burkina Faso, Africa. Int Dent J. 2004;54(2):83

How to cite this article?
How to cite this article: Ullah S, Ishaq S, Bibi Z, Shah S, Pattern of Dental Diseases Among the Patients Reporting to Dental Hospitals at Kurram Agency, Federal Administrative Tribal Area, Pakistan: Multicenter Cross Sectional Survey J Rehman Coll Dent 2023; 4(1): 11-16

Author Contributions

1. Sahib Ullah- Conceptualization, Methodology of study and Manuscript writing
2. Salma Ishaq- Literature review
3. Zainab Bibi- Manuscript review
4. Zainab Shah- Data Analysis and data interpretation