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Editorial

RESEARCH IN THE PRESENT TIME

In our local dental world today, where research should be of big help to dental practitioners, there seems to be lack of interest. It has been touted, that studies of new practices, as required in the present constrained pandemic, should be done. But difficulties have set in, precisely because of the pandemic, which seems to have cornered the dentists into struggling to just stay afloat.

Dental students are dependent on instructions from dental educators who are clawing their way around in unfamiliar teaching methodologies. How to keep students interested in learning? How to teach clinical courses via zoom? How to evaluate students' performance? All these tend to sideline research, even as new knowledge comes to fore, precisely because they are new and uncharted.

Interested minds should, therefore, be encouraged to take a look, get tuned in or tuned on. Alas, this is a time to gather information, investigate, observe and monitor closely, ask questions, reflect and study, evaluate, and see where curious minds will land and get to contribute to the art and science of dentistry, in this new normal setting.

Early Childhood Caries Experience of Children Seeking Consultations at Tertiary Government Hospital in La Union

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INTRODUCTION

Background/Rationale:

Early childhood caries (ECC) is a public health problem. The American Academy of Pediatric Dentistry defines Early Childhood Caries (ECC) as the presence of one or more decayed (non-cavitated or cavitated lesions), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months or below. The term "Severe Early Childhood Caries" (S-ECC) refers to "atypical" or "progressive" or "acute" or "rampant" patterns of dental caries. In children younger than 3 years of age, any sign of smooth-surface caries is indicative of severe early childhood caries (S-ECC). From ages 3 through 5, 1 or more cavitated, missing (due to caries), or filled smooth surfaces in primary maxillary anterior teeth or a decayed, missing, or filled score of ≥ 4 (age 3), ≥ 5 (age 4), or ≥ 6 (age 5) surfaces constitutes S-ECC (AAPD, 2008).

Literature is scarce on ECC in the Philippines. Results of the National Oral Health Survey in the Philippines in 2006 revealed that 97% of 6-year old children have dental caries and 85% caries prevalence among 12-year old children (Monse, et al 2006). The study did not include children below six years of age. In a study specifically for ECC in Northern Philippines, caries prevalence are as follows; the 2-year-olds have 59%, 3-year-olds 85%, 4 years old 90%, 5-year-olds 94%, and the 6-year-olds 92% (Cariño et al, 2003). No other published studies were found by the researchers regarding ECC in the Philippines.

Significance of the Study:

Results of this study will provide baseline data for the proposed oral health program for children below 6 years old who are seeking consultations at the Ilocos Training and Regional Medical Center. This study may also be used as a pilot for proposed similar studies in other areas.

Objectives:**General Objective**

To determine early childhood caries experience of children below 6 years old seeking consultation at ITRMC.

Specifically, the study aims to determine the

- Caries experience on different age groups (6, 5, 4, 3, 2)
- Number of decayed, extracted, and filled teeth
- Oral hygiene practices
- Feeding habits
- Demographic data
- The significant difference in the number of decayed teeth among the respondents in terms of their age
- The significant relationship between the number of decayed teeth and tooth brushing habits of the respondents
- The significant difference in the toothbrushing habits among the patients (respondents) in terms of their age

METHODOLOGY**Study Design:**

The method of research was descriptive and cross-sectional design.

Study Areas and Sample Population:

This pilot study aimed to determine the caries experience of children below 6 years old who will seek consultations at ITRMC's Emergency Room, Pedia ward, Family Medicine, Out Patients Department (OPD), Departments of Pediatrics, ENT, and Ortho. The dentist who gathered the data was oriented and calibrated in conducting an oral examination and assessment of dental caries. The study measured the prevalence of Early Childhood Caries. Purposive sampling was done among patients who sought consultation at the ITRMC for three months. Clinical examination and interview of parents/guardians were done once a week. This was performed by assigned personnel and not by the dentists

themselves for the selection of participants for the study to avoid bias. Patients below 6-years-old were included in the study, while 6-year-olds and above were excluded.

Data collection:

Permission to conduct the study was first submitted to the Professional Education Training Research Office (PETRO), to the Chief of Medical Professional Staff Office (CMPS), and the Medical Center Chief Office (MCCO) for final approval. The research proposal was then forwarded to the Research Committee for its technical review and transmitted to Ethics and Review Committee for its ethical consideration.

Data collection was done using two methods by clinical (oral examination) and a face-to-face interview with parents/guardians. The dentist researchers performed oral examinations and interviews with the parents/guardians with the help of dental aides. Oral examination using the WHO standard chart was done by the dentists while wearing proper protective equipment. This was done once a week for three months. Risk assessment was done as part of the medical history of patients. Standardization and training of the examiners were done before the actual examination. The training included simulated calibration using Powerpoint where the trainees were shown photos of cases asked to diagnose a case for early childhood caries. This was followed by diagnosing in a clinical setting. This was to ensure that the examiners are standardized in their diagnosis. The researchers also secured good clinical practice certificates. The examiners used the standard oral examination forms by WHO. The patients were examined using lighting from the examiner, with the child placed on the laps of the parent or guardian, or on a stool and some at the dental chair. Uncooperative patients were excluded. A child was considered to have ECC if at least one cavity is present which is based on the definition by the American Academy of Pediatric Dentistry (AAPD). Caries experience was determined using df index (decayed, filled), and prevalence of early childhood caries was computed. Minimal discomfort but no harm will be experienced by the participants. Patients diagnosed with ECC were referred for management. An Interview was done to obtain data on medical, social, dental histories including oral hygiene practices using standard patients' charts.

Ethical Considerations:

Ethical and technical clearance was sought from ITRMC Ethics Review Committee before the commencement of the study and was approved. Informed consent signed by the parent or guardian was obtained before the examination. The participants were informed that they are free to withdraw from the study anytime without any consequence.

Data Analysis:

Data were first coded and entered into an Excel sheet, and then imported to SPSS for analysis. The dmft index is used to describe the prevalence of dental caries in an individual. The lower the dmft index scores the better the dental health of the children. Data on medical, social, dental histories including oral hygiene practices were analyzed by getting the frequency and percentage distribution. A one-way ANOVA between groups analysis of variance was conducted to explore the impact of age on the number of decayed teeth. Multiple comparisons were done by using the Tukey post hoc test to further determine the significant differences between the 5 age groups. Consultation with the statistician was done for further analysis of data.

RESULTS AND ANALYSIS

This study covered ages 2 to 6 years old, 56 were at age 2, 52 at age 3, 54 at age 4, 42 at age 5, and 46 at age 6 with a total of 250 respondents. Table 1 shows the distribution of treatment facilities by sex. There were more respondents from the OPD Pediatrics (219 or 87.6%) compared to OPD Animal Bite Treatment Center (13 or 5.2%), New Born Screening (8 or 3.2%), Dental Clinic (4 or 1.6%), Pedia ward (2 or 0.8%), OPD Ortho (2 or 0.8%) and OPD Otorhinolaryngology-Head and Neck Surgery (2 or 0.8%). The females (136 or 54.4%) outnumbered the males (114 or 45.6%).

Table 1. Distribution of treatment facilities by sex.

Treatment facilities	Male (n)	%	Female (n)	%	Total (n)	%
Dental Clinic	2	50	2	50	4	1.6
Pedia Ward	1	50	1	50	2	0.8%
OPD Pediatrics	101	46	118	54	219	87.6%
OPD Animal Bite Treatment Center	6	46	7	54	13	5.2%
OPD Orthopedics	1	50	1	50	2	0.8%
OPD Otorhinolaryngology- Head and Neck Surgery	1	50	1	50	2	0.8%
New Born Screening	2	25	6	75	8	3.2%
TOTAL	114	45.6	136	54.4	250	100

Table 2 shows the distribution of treatment facilities by age, wherein there were more respondents at age 2 (59 or 24%) compared to Age 3 (49 or 20%), Age 4 (55 or 22%), Age 5 (42 or 17%), Age 6 (45 or 18%). OPD Animal Bite Treatment Center (13 or 5.2%), New Born Screening (8 or 3.2%), Dental Clinic (4 or 1.6%), Pedia ward (2 or 0.8%), OPD Orthopedics (2 or 0.8%), and OPD Otorhinolaryngology-Head and Neck Surgery (2 or 0.8%). The females (136 or 54.4%) outnumbered the males (114 or 45.6%).

Table 2. Distribution of treatment facilities by age.

Treatment facilities	Age 2	%	Age 3	%	Age 4	%	Age 5	%	Age 6	%	TOTAL	
Dental Clinic			2	4					2	4		
Pedia Ward	1	2							1	2		
OPD Pediatrics	50	89	46	88	44	81	40	95	39	85	219	
OPD Animal Bite Treatment Center	3	5	1	2	5	9	2	5	2	4		
OPD Orthopedics					1	2			1	2		
OPD Otorhinolaryngology-Head and Neck Surgery					2	4						
New Born Screening	3	5	2	4	2	4			1	2		
TOTAL	56		52		54		42		46		250	100

Table 3. shows the location of the respondents and most of them came from the Province of La Union, 218 or 87.2.

Location	Total population	5
La Union	218	87.2
Pangasinan	6	2.4
Ilocos Sur	14	5.6
Ilocos Norte	5	2
Baguio	7	2.8
TOTAL	250	100%

Dental Caries Status

Table 4 shows the over-all dental caries status of children below 6 years old. Oral examination was done to determine the dental caries status of the 250 respondents and a set of questionnaires were given to the parents or guardians of the children. Further, it shows the dental caries experience of the respondents by age group. The dmft score of age 6 had the highest score (5.96). Age 2 had the lowest dmft score of 1.71 and only d (decayed) component was present and no m (missing) and f (filled tooth) being registered. A total dmft of 3.9 was registered.

Table 4. Dental Caries Experience by Age.

Age	Total population	d	m	f	dmft score
2	56	96	-	-	1.71
3	52	117	-	-	2.25
4	54	264	-	-	4.89
5	42	215	-	-	5.12
6	46	274			5.96
TOTAL dmft	250	966			3.9

Note: dmft score's formula is d/ total population

Table 5 reveals that the prevalence of the early childhood caries of the respondents was 59% while Table 6 shows the dmft score of the respondents. A total of 102 or 41% of the respondents were caries-free while 148 or 59% of the respondents had decayed tooth.

Table 5. Prevalence of Early Childhood Caries.

Age	Total population	Prevalence of ECC	%
2	56	18	32
3	52	27	52
4	54	36	67
5	42	32	76
6	46	35	76
TOTAL	250	148	59

Table 6. The dmft score of the respondents,

DMFT score	Frequency (n=250)	Percent
0 (caries-free)	102	40.8
1	6	2.4
2	24	9.6
3	8	3.2
4	14	5.6
5	14	5.6
6	18	7.2
7	8	3.2
8	10	4
9	4	1.6
10	10	4
11	7	2.8
12	8	3.2
13	2	0.8
14	3	1.2
15	2	0.8
16	5	2
17	1	0.4
18	1	0.4
20	3	1.2

Oral Hygiene Practices

Table 7 shows that most of the respondents brush their teeth two times a day with 86 or 34.4% and almost 50% of both sexes brush their teeth two times a day, 40 (16%) for males while 46 (18.4%) for females.

Table 7. Frequencies of tooth brushing by Sexes.

	Sexes				Total n=250 %	
	Male n=85	%	Female n=140	%		
Frequency of tooth brushing						
Never/sometimes	19	7.6	18	7.2	37	14.8
Once	27	10.8	29	11.60	56	22.4
Twice	40	16	46	18.4	86	34.4
Thrice	34	13.6	37	14.8	71	28.4

However, Table 8 reveals that there were respondents who did not brush or do not routinely brush their teeth, there were 27 or 10.8%, 5 or 2%, 2 or 0.8%, 1 or 0.4% and 2 or 0.8% for the 2years old, 3 years old, 4 years old, 5 years old and 6 years old respectively.

Most of the respondents, 116 or 46.4% brush their teeth twice a day. The 4 years old had the most numbered who brushed their teeth twice a day, 35 respondents or 14%.

Table 8. Frequencies of tooth brushing by Ages.

Frequency of tooth brushing	2 yo n=56 %	3yo n=52 %	4yo n=54 %	5yo n=42 %	6yo n=46 %	Total n=250 %
Never/ Sometimes	27 10.8	5 2	2 0.8	1 0.4	2 0.8	37 14.8
Once	11 4.4	15 6	13 5.2	7 2.8	8 3.2	54 21.6
Twice	15 6	21 8.4	35 14	21 8.4	24 9.6	116 46.4
Thrice	3 1.2	11 4.4	4 1.6	13 5.2	12 4.8	43 17.2

Feeding habits

Table 9 presents that most of the respondents, 133 or 53.2% did not breastfeed their babies, and less than 50% of the respondents who breastfed their babies, 117 or 46.8%.

Table 9. Breastfed by Ages.

Breastfeeding given from 0-6 months	2 yo n=56 %	3yo n=52 %	4yo n=54 %	5yo n=42 %	6yo n=46 %	Total n=250 %
Yes	37 14.8	30 12	27 10.8	18 7.2	5 2	117 46.8
No	19 7.6	22 8.8	27 10.8	24 9.6	41 16.4	133 53.2

Table 10 presents that most of the respondents, 183 or 73.2% slept with bottled milk in their mouth and only 67 or 26.8% slept without. Table 11 shows that the majority of the children never visited a dentist, 223 or 89.2%.

Table 10. Sleeps with bottled milk by Ages.

Sleeping with Bottled Milk	2 yo n=56 %	3yo n=52 %	4yo n=54 %	5yo n=42 %	6yo n=46 %	Total n=250 %
Yes	13 5.2	15 6	19 7.6	6 2.4	14 5.6	67 26.8
No	43 17.2	37 14.8	35 14	36 14.4	32 12.8	183 73.2

Table 11. Visits to the Dentists by Age.

Visit the Dentist	2 yo n=56 %	3yo n=52 %	4yo n=54 %	5yo n=42 %	6yo n=46 %	Total n=250 %
Yes	4 1.6	5 2	6 2.4	7 2.8	5 2	27 10.8
No	52 20.8	47 18.8	48 19.2	35 14	41 16.4	223 89.2

Demographic data

Table 12 shows that majority of the children are taken care of by their parents, and Table 13 further shows that the majority of these parents claim that they are unemployed.

Table 12. Persons taking good care of the child.

Persons taking good care of the child	n=250	%
Parent/s	213	85.2
Grandparents	29	11.6
Other relatives	8	3.2
Not blood-related	0	

Table 13. Employment status.

	n=250	%
Currently employed	17	6.8
Self-employed	46	18.4
Unemployed	187	74.8

Table 14 shows that majority of these parents claim that they finished secondary level of education and none of them have post studies

Table 14. Educational Level.

	n=250	%
Primary	27	10.8
Secondary	135	54
Tertiary	80	32
Post-graduate	0	
Vocational	8	3.2

Difference between the numbers of decayed teeth in terms of their age

Tables 15, 16, and 17 further show a one-way between-groups analysis of variance was conducted to explore the impact of age on the number of decayed teeth. Respondents were divided into five groups according to their age (2 years old, 3 years old, 4 years old, 5 years old, and 6 years old.). There was a statistically significant difference in the number of decayed teeth for the five age groups $F(4, 245) = 6.621, p < .000$. Despite reaching statistical significance, the actual difference in mean scores between groups was quite small. A Tukey post hoc test showed that there was a significant difference between 2 years old and 4 years old groups ($p = .003$), between 2 years old and 5 years old groups ($p = .003$), and between 2 years old and 6 years old groups ($p = .000$). There was no statistically significant difference in the number of decayed teeth between 2 years old and 3 years old groups ($p = .336$).

Table 15. The significant difference in the numbers of decayed teeth in terms of their age.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
2yrs/old	56	1.7143	3.50436	.46829	.7758	2.6528	.00	16.00
3yrs/old	52	3.4038	4.85984	.67394	2.0509	4.7568	.00	20.00
4yrs/old	54	4.9630	5.41125	.73638	3.4860	6.4399	.00	20.00
5years/old	42	5.1667	4.60602	.71072	3.7313	6.6020	.00	20.00
6yrs/old	46	5.9130	4.92534	.72620	4.4504	7.3757	.00	17.00
Total	250	4.1200	4.89914	.30985	3.5097	4.7303	.00	20.00

Table 16. The significant difference between the age groups on the number of decayed teeth in their age.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups (among between 2 and 3)	583.041	4	145.760	6.621	.000
Within Groups per age group	5393.359	245	22.014		
Total	5976.400	249			

ANOVA Results

Table 17. Tukey post hoc test results on the significant difference between the number of decayed teeth and their age.

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2yrs/old	3yrs/old	-1.68956	.90357	.336	-4.1728	.7936
	4yrs/old	-3.24868*	.89485	.003	-5.7079	-.7894
	5years/old	-3.45238*	.95773	.003	-6.0844	-.8204
	6yrs/old	-4.19876*	.93363	.000	-6.7646	-1.6330
3yrs/old	2yrs/old	1.68956	.90357	.336	-.7936	4.1728
	4yrs/old	-1.55912	.91159	.430	-4.0644	.9461
	5years/old	-1.76282	.97338	.370	-4.4379	.9122
	6yrs/old	-2.50920	.94968	.066	-5.1191	.1007
4yrs/old	2yrs/old	3.24868*	.89485	.003	.7894	5.7079
	3yrs/old	1.55912	.91159	.430	-.9461	4.0644
	5years/old	-.20370	.96530	1.000	-2.8565	2.4491
	6yrs/old	-.95008	.94139	.851	-3.5372	1.6371
5years/old	2yrs/old	3.45238*	.95773	.003	.8204	6.0844
	3yrs/old	1.76282	.97338	.370	-.9122	4.4379
	4yrs/old	.20370	.96530	1.000	-2.4491	2.8565
	6yrs/old	-.74638	1.00135	.946	-3.4983	2.0055
6yrs/old	2yrs/old	4.19876*	.93363	.000	1.6330	6.7646
	3yrs/old	2.50920	.94968	.066	-.1007	5.1191
	4yrs/old	.95008	.94139	.851	-1.6371	3.5372
	5years/old	.74638	1.00135	.946	-2.0055	3.4983

*.The mean difference is significant at the 0.05 level.

Dependent variable: Decayed teeth, independent variable: age

Tukey HSD (statistical tool used)

Association between the numbers of decayed teeth and toothbrushing habit of the respondents.

Tables 18 and 19 show that there was a significant relationship between the number of decayed teeth and tooth brushing habits among the patients at 0.01 level of significance ($r = -.234$, $p = .000$).

Table 18. Descriptive Statistics between the decayed teeth and brushing habit.

	Mean	Std. Deviation	N
Decayed Teeth	4.1200	4.89914	250
Brushing Habits	.8520	.35581	250

Table 19. The Correlations between the number of decayed teeth and tooth brushing habits of the respondents.

		Decayed Teeth	Brushing Habits
Decayed Teeth	Pearson Product Moment Correlation Coefficient (r)	1	-.234**
	Sig. (2-tailed)		.000
	N	250	250
	Pearson Correlation	-.234**	1
Brushing Habits	Sig. (2-tailed)	.000	
	N	250	250

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

The difference in the toothbrushing habits among the respondents in terms of their age

Tables 20, 21, and 22 show that there was a statistically significant difference between groups on the tooth brushing habits of the respondents as determined by one-way ANOVA ($F(1,248) = 14.328, p = .000$). A Tukey post hoc test revealed that the toothbrushing habit was significantly different between 2 years old and the other 4 age groups. This implies that the younger the respondent the less frequently they brush their teeth.

Table 20. A descriptive analysis on the toothbrushing habits in terms of their age.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
no brushing	37	1.3784	3.23481	.53180	.2998	2.4569	.00	16.00
with brushing	213	4.5962	4.98738	.34173	3.9226	5.2699	.00	20.00
Total	250	4.1200	4.89914	.30985	3.5097	4.7303	.00	20.00

Table 21. Significance difference between the groups.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	326.420	1	326.420	14.328	.000
Within Groups	5649.980	248	22.782		
Total	5976.400	249			

Table 22. Tukey post hoc test results on the significant difference between the toothbrushing habits among the respondents in terms of their age.

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2yrs/old	3yrs/old	-.38599*	.05941	.000	-.5493	-.2227
	4yrs/old	-.44511*	.05884	.000	-.6068	-.2834
	5years/old	-.45833*	.06297	.000	-.6314	-.2853
	6yrs/old	-.43866*	.06139	.000	-.6074	-.2700
3yrs/old	2yrs/old	.38599*	.05941	.000	.2227	.5493
	4yrs/old	-.05912	.05994	.861	-.2238	.1056
	(same habit)					
	5years/old	-.07234	.06400	.790	-.2482	.1035
4yrs/old	6yrs/old	-.05268	.06244	.917	-.2243	.1189
	2yrs/old	.44511*	.05884	.000	.2834	.6068
	3yrs/old	.05912	.05994	.861	-.1056	.2238
	5years/old	-.01323	.06347	1.000	-.1877	.1612
5years/old	6yrs/old	.00644	.06190	1.000	-.1637	.1765
	2yrs/old	.45833*	.06297	.000	.2853	.6314
	3yrs/old	.07234	.06400	.790	-.1035	.2482
	4yrs/old	.01323	.06347	1.000	-.1612	.1877
6yrs/old	6yrs/old	.01967	.06584	.998	-.1613	.2006
	2yrs/old	.43866*	.06139	.000	.2700	.6074
	3yrs/old	.05268	.06244	.917	-.1189	.2243
	4yrs/old	-.00644	.06190	1.000	-.1765	.1637
	5years/old	-.01967	.06584	.998	-.2006	.1613

*. The mean difference is significant at the 0.05 level.

Dependent Variable: Brushing Habits

Tukey HSD

Association between decayed teeth with sleeping with milk

Tables 23 and 24 show that there was a moderate/substantial significant relationship between dental caries and sleeping with milk ($r = 0.488$, $p = .000$). This implies that the more frequently the respondent sleeps with milk the higher the risk of having dental caries.

Table 23. Descriptive Statistics between respondents with decayed tooth and sleep with milk.

	Mean	Std. Deviation	N
Decayed Teeth	4.1200	4.89914	250
Sleep with Milk	.2880	.45374	250

Table 24. The correlations between the respondents with decayed tooth and sleep with milk.

		Decayed Teeth	Sleep with Milk
Decayed Teeth	Pearson Correlation	1	.488**
	Sig. (2-tailed)		.000
	N	250	250
Sleep with Milk	Pearson Correlation	.488**	1
	Sig. (2-tailed)	.000	
	N	250	250

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

Direct relationship (+)

Tables 25 and 26 show that there was no significant relationship between dental caries and breastfeeding among the respondents.

Table 25. Descriptive Statistics between respondents with decayed tooth and breastfeed.

	Mean	Std. Deviation	N
Decayed Teeth	4.1200	4.89914	250
Breastfeed	1.5280	.50022	250

Table 26. The correlations between the respondents with decayed tooth and breastfeed.

		Decayed Teeth	Breastfeed
Decayed teeth	Pearson	1	.105
	Correlation		
	Sig. (2-tailed)		.097
	N	250	250
Breastfeed	Pearson	.105	1
	Correlation		
	Sig. (2-tailed)	.097	
	N	250	250

$r = .105$ negligible to slight relationship but not significant ($p = .097$)

DISCUSSION

The findings in this study indicate that caries prevalence among the respondents is considerably high. Only 102 respondents or 40.8% were caries-free among the respondents.

The caries prevalence of early childhood caries of the respondents was 59% among the age groups 5 and 6 and having the highest prevalence rate of 76%. The results did not portray a good status of dental health. This reinforces a previous study conducted by Carino et al, 2003, specifically for ECC in Northern Philippines, caries prevalence was as follows; the 2-year-olds have 59%, 3-year-olds 85%, 4 years old 90%, 5-year-olds 94%, and the 6-year-olds 92%.

The mean dmft was 3.9 for the 250 respondents and surprisingly that at age of 2 had already decayed tooth with a mean dmft of 1.71 and the 6 years old had the highest mean dmft of 5.96.

Table 7 shows the frequencies of toothbrushing by sexes where most of the females brush their teeth twice a day 18.4% compared to the male of 16%. Both sexes brush their teeth twice a day, 86 or 34.4%. Table 8 shows that most of the respondents brush their teeth twice a day 166 or 46.4%.

The prevention of dental caries is brought about also by having exclusive breastfeeding from 0-6months old; most of the respondents did not breastfeed their babies, 133 or 53.2%. Knowledge alone on what prevents and/or causes dental caries is not sufficient. It must

be accompanied by correct attitudes, good oral hygiene practices, and sufficient dental health services. Another factor that brings about prevention and/ or reduction of dental caries is the avoidance of sleeping with bottled milk wherein 183 or 73.2% of the respondents did not sleep with bottled milk in their mouth. It clearly shows that most of the parents or guardians knew that sugary foods cause dental caries.

Dental caries is the process of enamel and dentin demineralization caused by various acids formed from bacteria in dental plaque. It involves the dissolution of minerals of the tooth surface by organic acids formed from bacterial fermentation of sugars derived from the diet. So although the bacteria produce the acids and are considered a cause of caries, the bacteria do not produce sufficient acids to demineralize enamel without sugar or sugars in combination with finely ground and heat-treated starch or with cooked starchy foods.

Table 11 reveals that only 27% had visited the dentists within the year. This means that most of them did not receive dental services in a year, 223 or 89%. Tables 23 and 24 show that there was a moderate/substantial significant relationship between dental caries and sleeping with milk. Table 25 and 26 show that there was no significant relationship between dental caries and breastfeeding among the respondents.

Overall, the researcher found out that caries prevalence among the respondents is considerably high and less than 50% were caries-free.

Limitations of the Study:

The data obtained in this study may also have its limitations. First, a cross-sectional design was used to determine the high-risk indicators of dental caries; thus the findings from this study couldn't determine the cause-effect relationship. Second, it may be possible that there was a recall bias at the time of answering the questions by the parents/guardians. Third, may have been the early onset of dental caries which in turn may affect their dental habits.

Conclusion:

- More than half of the children examined have early childhood caries.
- Most of the children brush their teeth twice a day.
- More than half of the population is breastfed from 0-6 months.
- The majority of the children examined sleep with a bottle of milk and never visited a dentist.

- The majority of the children are taken care of by their parents, and a majority of these parents claim that they are unemployed.

Recommendations:

- Increase awareness of parents on adverse effects of sleeping with a bottle of milk and its role on early childhood caries formation.
- Promote breastfeeding for general and oral health.
- Strengthen oral health education and promotion on oral hygiene practices and early childhood caries.
- Further study on early childhood caries on different populations.

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In vitro antimicrobial property of *Allium tuberosum* rottler ex spreng (Kusay) leaf ethanol extract on *Aggregatibacter actinomycetemcomitans* and *Porphyromonas gingivalis* versus chlorhexidine gluconate oral rinse

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INTRODUCTION

Periodontal disease is the loss of alveolar bone and periodontal ligament. The disease undergoes spontaneous periods of exacerbation and remission which, if left untreated, will lead to tooth mobility and ultimately progresses to edentulism. Periodontal disease is the second most prevalent chronic oral disease worldwide (CHED, 2018). An epidemiological study has shown that approximately 78% of Filipinos have periodontal diseases. (DOH, 2011) A 2006 study done by the Philippine National Oral Health Survey (NOHS) has shown that 74% of 12-year-old Filipinos suffer periodontal disease which, if left untreated, may exacerbate into irreversible periodontal damage. (Monse, et al., 2012) The prevention and treatment of periodontal diseases are highly dependent on the suppression and management of the pathologic micro-organisms.

More than 500 bacterial species have been known to cause periodontal diseases. (Chen, Hemme, & Beleno, 2018) Of those 500 species, *Aggregatibacter actinomycetemcomitans* (*A. actinomycetemcomitans*) is frequently seen in children with periodontal disease. Studies have shown that *Porphyromonas gingivalis* (*P. gingivalis*) is found in less than 10% of individuals with healthy periodontium. However as high as 40-100% of adults with periodontitis presented with a significantly high concentration of *P. gingivalis* in subgingival microbiota. (Chickanna, Prabhuji, & Nagarjuna, 2015)

The prevalence of these micro-organisms has been known to vary within different populations. (Chen, Hemme, & Beleno, 2018) Precisely because periodontal disease is polymicrobial, facilitates the need for an antiseptic agent with a broad-spectrum antimicrobial effect. (Slots J., 2002)

Chlorhexidine Gluconate (CHG) is a broad-spectrum antiseptic agent that is frequently prescribed as an adjunct medication for the treatment of periodontal disease following the mechanical removal of dental plaque and calculus. It has been extensively studied and is considered to be the "gold standard" by which all oral rinses are compared. (Abraham, Philip, Kruppa, Jain, & Krishnan, 2015) At low concentrations, CHG has a bacteriostatic effect; at higher concentrations it is bactericidal. (Abraham, Philip, Kruppa, Jain, & Krishnan, 2015)

More than 700 species of the *Allium* genus are widely distributed all over the world. They are easy to grow and hardy with some species having a long shelf life. The genus varies broadly in terms of appearance and taste but quite similar in biochemical and phytochemical content. (Mnayer, et al., Chemical Composition, Antibacterial and Antioxidant Activities of Six Essentials Oils from the Alliaceae Family, 2014) It is known through literature that the varied functional properties of the *Allium* genus is from the high content of bioactive compounds. (Putnik, et al., 2019) Multiples studies have shown the antibacterial properties of the *Allium* genus (members include garlic, onions, chives, and shallots). Most extensively studied is the *Allium* family of which *Allium tuberosum* Rottler ex Spreng (Kusay, Kuchai, Chinese Chives) and Garlic is a part. Garlic has been shown to have immunomodulatory and anticancer effects both in vitro and in vivo. (Fallah-Rostami, Tabari, Esfandiari, Aghajanzadeh, & Behzad, 2013) The *Allium tuberosum* Rottler ex Spreng is a perennial herb that is used widely in Asian cuisine. It is used as traditional medicine as a remedy for abdominal pain, diarrhea, hematemesis, snakebite, and asthma. . (Han, Suh, Park, Kim, & Lee, 2015) In the Philippines, Kuchai leaf is used in folk medicine as a topical medicament for mild hematoma and bruises. The current literature indicates that Kusay showed antimicrobial properties against bacteria such as MRSA. Currently, to the best of our knowledge, there is no data on the activity of Kusay against bacteria causing periodontal diseases.

Although there are numerous studies related to the efficacy of *A. tuberosum* against other microorganisms, there is currently a deficiency in the literature regarding the efficacy of *A. tuberosum* extract against periodontogenic bacteria such as *A. actinomycetemcomitans* and *P. gingivalis*.

According to the DOH, Juvenile and Adult periodontal disease is on the rise at an alarming rate. The prevalence of Periodontal disease rose from 65.5% in 1987 to 78.3% in 1998. (DOH, 2011)

Although it is considered the “gold standard” antiseptic agent widely used in dentistry, CHG is not without its drawbacks. The use of CHG has always been limited by dentists because it has been known to cause extrinsic stains and altered taste. Some literature also suggests that CHG may promote mineral uptake into the biofilm making the biofilm calcified and harder to remove.

Objectives of the Study:

- a) To determine the in vitro susceptibility of *A. actinomycetemcomitans* and *P. gingivalis* against *A. tuberosum* Rottler ex Spreng (Kusay) Leaf Ethanol Extract.
- b) To determine the comparative difference in antimicrobial efficacy between Kusay and CHG

Significance of the Study:

After dental caries, periodontal disease ranks number two on the most prevalent chronic oral diseases worldwide. (CHED, 2018) According to NOHS, a very significant portion of the juvenile population in the Philippines suffer from periodontal disease. (Monse, et al., 2012) Because of the Philippine status as a developing nation, certain economic barriers contribute to the prevalence of periodontitis. The therapy of periodontal disease is centered on evidence-based diagnosis, and the treatment plan takes into consideration, amongst other things, socioeconomic status, and patient compliance. (Slots J. , Low-cost periodontal therapy, 2012) The lower average economic status of many Filipinos constitutes a need for low-cost alternative prevention and treatment of periodontal disease.

This study will focus on determining the mode of antimicrobial action of Kusay against two of the most pathologic micro-organisms causing periodontal diseases; *A. actinomycetemcomitans* and *P. gingivalis* as compared to commonly prescribed CHD Oral Rinse in vitro. (Chickanna, Prabhuji, & Nagarjuna, 2015) Currently, this is the first available study to investigate the antimicrobial properties of Kusay. This study will provide a foundation for further research and ultimately determine if Kusay can be used as a readily available and economical alternative to CHG Oral Rinse. Thus, providing an alternative oral antiseptic agent to populations of low income including those who are geographically remote.

Scope and Limitations of the Study:

This study will determine the concentration of Kusay ethanol extract which is most effective against the *A. actinomycetemcomitans* and *P. gingivalis*. The results will be compared against Chlorhexidine Gluconate to determine if Kusay will be useful as a natural alternative. Although periodontitis has polymicrobial pathogenesis, this study will be limited to testing on *A. actinomycetemcomitans* and *P. gingivalis* – these are the two most significant bacteria causing periodontitis.

METHODOLOGY

This is a prospective experimental study that employs the quantitative method of measurements using *A. actinomycetemcomitans* and *P. gingivalis* as research subjects which are taken from the bacterial bank of the Department of Microbiology at Virgen Milagrosa University Foundation and subjected to treatment with the test sample (Kusay). To eliminate bias, the results are compared with 0.12% Orahex® Chlorhexidine Gluconate as the positive control. The experimental phases of the study will be conducted within the premises of the Virgen Milagrosa University Foundation (VMU) in San Carlos City, particularly in the department of microbiology under the supervision of Mrs. Marivic P. Paris (Medical Laboratory Technician). The primary research instruments identified in this study are the prepared plant extract (Kusay), glasswares, technical and analytical grade solvents, reagents, test solutions, chemicals, and microbiological media which are already available in the laboratory.

Harvesting and Extraction of Plant Sample

Leaves of the Kusay plant were harvested from one of the members' back garden in Manaoag, Pangasinan. Voucher specimens of the whole plant will be presented to Dr. Ronald Cabral; the research professor and the Provincial Environment and Natural Resources Office (PENRO) in Dagupan City, Pangasinan for verification. Considering that the few studies in literature used *A. tuberosum* leaves as a primary source for extracts, an ethanol extract was prepared by using 100 g of *A. tuberosum* leaves and 100 mL of ethanol. The extract preparation method used in this study was based on the method used by Kapadia et al. with some modifications. The areal parts (100g) of the acquired *A. tuberosum* will be chopped and macerated and homogenized in a blender along with ethanol. The *A. tuberosum*-Ethanol mixture will be left at room temperature for 48 hours. The mixture was then placed in an evaporator to remove any left-over ethanol component. The ethanol will be replaced with sterile water to preserve any active components in the extract. (Esfahani, Kadkhoda, Eshraghi, & Surmaghi, 2014)

Disk diffusion assay

The agar disk diffusion method was carried out to determine the antimicrobial activity of *A. tuberosum* extract against *P. gingivalis* and *A. actinomycetemcomitans* strains. Three to five well-isolated colonies from each of the *P. gingivalis* (Plate 1) and *A. actinomycetemcomitans* (Plate 2) pure cultures were suspended in separate test tubes containing brain heart infusion broth. Both test tubes (Plate 3) were incubated at 37° C for 2-8 hours under anaerobic conditions and the density was adjusted to the standard McFarland 0.5 turbidity. A total of 8 Mueller Hinton agar plates were prepared and was inoculated by transferring and spreading a volume of *A. actinomycetemcomitans* and *P. gingivalis* into 4 plates per bacteria with the use of sterile swabs, squeezing the swab against the test tube wall to remove any excess. Even distribution of microorganisms was attained by swabbing plates 3-4 times and then rotating the dish approximately 60° between streaking. (Kapadia, Pudukalkatti, & Shivanaikar, 2015). Six filter paper disk per agar plate was aseptically punched with a diameter of 6-10mm. The respective filter paper disks were soaked with 100%, 75%, 50%, and 25% concentrations of Kusay ethanol extract. By using sterile forceps, three paper disks with the same concentration were distributed onto one inoculated agar plate. This step was repeated following the three other concentrations and placing them on separate inoculated agar plates. Three paper disks were also soaked in the Orahex® Chlorhexidine Gluconate 0.12% and distributed along with each concentration of Kusay ethanol extract serving as the positive control totaling 6 disks per agar plate. The agar plates were then incubated at 37°C for 24 hours in an incubator under anaerobic conditions. Each disk was then examined for inhibitory zones and with a ruler, the diameter was measured up to where a sudden decrease in growth is observed and recorded. (Esfahani, Kadkhoda, Eshraghi, & Surmaghi, 2014)



Plate 1 – Isolated Bacterial Colony of *P. gingivalis*



Plate 2 – Isolated Bacterial Colony of *A. actinomycetemcomitans*



Plate 3 - test tubes containing brain heart infusion broth

Statistical Analysis:

The data were analyzed using ANOVA. To determine which among the concentrations was statistically different, a post-hoc test (Multiple Comparisons) was applied. Tukey HSD test was used as a pairwise comparison of the concentrations. $P > 0.05$ mean difference was considered statistically significant.

RESULTS AND DISCUSSION

Both strains of periodontal pathogens exhibited susceptibility to Kusay ethanol extract.

Disk diffusion assay

Using the disk diffusion method, Kusay ethanol extract exhibited a mean zone of inhibition of $15.33 \text{ mm} \pm 1.15 \text{ mm}$ at 100% concentration against *A. actinomycetemcomitans* (Plate 4) and $15.33 \text{ mm} \pm 1.15 \text{ mm}$ at 100% concentration against *P. gingivalis* (Table 1 and Table 2).

Table 1. Susceptibility of *A. actinomycetemcomitans* vs. Kusay ethanol extract with CHG as positive control

Concentrations:	Trial 1	Trial 2	Trial 3	Effectivity
100%	16mm	16mm	14mm	85%
75%	16mm	16mm	14mm	85%
50%	16mm	14mm	14mm	80%
25%	14mm	14mm	12mm	75%
CHG	22mm	22mm	22mm	95%

Table 2. Susceptibility of *P. gingivalis* vs. Kusay ethanol extract with CHG as positive control

Concentrations:	Trial 1	Trial 2	Trial 3	Effectivity
100%	16mm	16mm	14mm	85%
75%	16mm	14mm	14mm	80%
50%	16mm	14mm	14mm	80%
25%	14mm	14mm	12mm	75%
CHG	22mm	22mm	22mm	95%

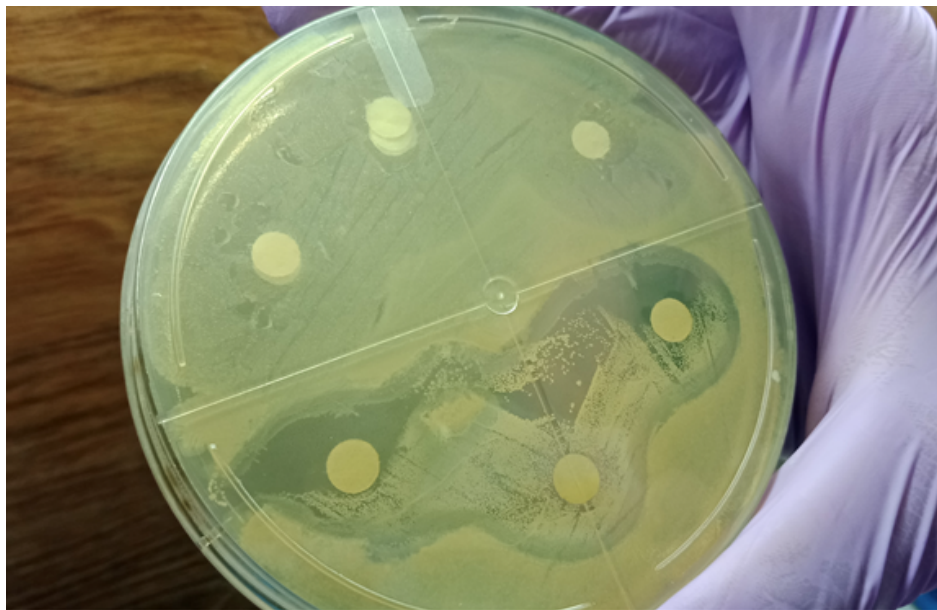


Plate 4 – Inhibition zone of 100% concentration of Kusay ethanol extract (Upper) and CHG (Lower)

A. actinomycetemcomitans

Table 3. ANOVA

<i>Aggregatibacter actinomycetemcomitans</i>					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	137.067	4	34.267	32.125	0.000
Within Groups	10.667	10	1.067		
Total	147.733	14			

One-way analysis of variance (ANOVA) was utilized to determine the difference between the susceptibility of the bacteria *A. actinomycetemcomitans* against kusay leaf ethanol extract. Results show that among the five different concentrations (i.e. four extracts and one positive control), there is a significant difference between the susceptibility of the bacteria against the concentrations ($F = 32.125$, $p < 0.001$). To determine which among the concentrations is significantly different, a post-hoc test (Multiple Comparisons) was applied.

Table 4: Multiple Comparisons						
Dependent Variable: <i>Aggregatibacter antinomycetemcomitans</i>						
Tukey HSD						
(I) Concentration	(J) Concentration	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence interval	
					Lower Border	Upper Border
25%	50%	.00000	.84327	1.000	-2.7753	2.7753
	75%	.66667	.84327	.928	-2.1086	3.4420
	100%	2.00000	.84327	.200	-.7753	4.7753
	CHG	-6.66667	.84327	.000	-9.4420	-3.8914
50%	25%	.00000	.84327	1.000	-2.7753	2.7753
	75%	.66667	.84327	.928	-2.1086	3.4420
	100%	2.00000	.84327	.200	-.7753	4.7753
	CHG	-6.66667	.84327	.000	-9.4420	-3.8914
75%	25%	-.66667	.84327	.928	-3.4420	2.1086
	50%	-.66667	.84327	.928	-3.4420	2.1086
	100%	1.33333	.84327	.539	-1.4420	4.1086
	CHG	-7.33333	.84327	.000	-10.1086	-4.5580
100%	25%	-2.00000	.84327	.200	-4.7753	.7753
	50%	-2.00000	.84327	.200	-4.7753	.7753
	75%	-1.33333	.84327	.539	-4.1086	1.4420
	CHG	-8.66667	.84327	.000	-11.4420	-5.8914
CHG	25%	-.66667	.84327	.000	3.8914	9.4420
	50%	-.66667	.84327	.000	3.8914	9.4420
	75%	7.33333	.84327	.000	4.5580	10.1086
	100%	8.66667	.84327	.000	5.8914	11.4420
*The mean difference is significant at the 0.05 level.						

Table of Multiple Comparisons indicates pairwise comparisons of the concentrations using the Tukey HSD test. Results show that there are significant differences between the CHG and the 25% kusay extract ($F = -6.66667, p < .001$), the CHG and the 50% kusay extract ($F = -6.66667, p < .001$), the CHG and 75% kusay extract ($F = -7.33333, p < .001$), and the CHG and 100% kusay extract ($F = -8.66667, p < .001$). In other words, among the five concentrations, the positive control CHG was flagged to be the best concentration. Therefore, the various kusay leaf extracts are not as effective as the positive control.

P. gingivalis**Table 5. ANOVA**

<i>Porphyromonas gingivalis</i>					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	141.33	4	35.333	33.125	0.000
Within Groups	10.667	10	1.067		
Total	152.000	14			

One-way analysis of variance (ANOVA) was utilized to determine the difference between the susceptibility of the bacteria *Porphyromonas gingivalis* against kusay leaf ethanol extract.

Results show that among the five different concentrations (i.e. four extracts and one positive control), there is a significant difference between the susceptibility of the bacteria against the concentrations ($F = 33.125$, $p < .001$). To determine which among the concentrations is significantly different, a post-hoc test (Multiple Comparisons) was applied.

Table 6: Multiple Comparisons						
Dependent Variable: <i>Porphyromonas gingivalis</i>						
Tukey HSD						
(I) Concentration	(J) Concentration	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence interval	
					Lower Border	Upper Border
25%	50%	.66667	.84327	.928	-2.1086	3.4420
	75%	.66667	.84327	.928	-2.1086	3.4420
	100%	2.00000	.84327	.200	-.7753	4.7753
	CHG	-6.66667	.84327	.000	-9.4420	-3.8914
50%	25%	.66667	.84327	.928	-3.4420	2.1086
	75%	.00000	.84327	1.000	-2.7753	2.7753
	100%	1.33333	.84327	.539	-1.4420	4.1086
	CHG	-7.33333	.84327	.000	-10.1086	-4.5580
75%	25%	-.66667	.84327	.928	-3.4420	2.1086
	50%	.00000	.84327	1.000	-2.7753	2.7753
	100%	1.33333	.84327	.539	-1.4420	4.1086
	CHG	-7.33333	.84327	.000	-10.1086	-4.5580
100%	25%	-2.00000	.84327	.200	-4.7753	.7753
	50%	-1.33333	.84327	.539	-4.1086	1.4420
	75%	-1.33333	.84327	.539	-4.1086	1.4420
	CHG	-8.66667	.84327	.000	-11.4420	-5.8914
CHG	25%	6.66667	.84327	.000	3.8914	9.4420
	50%	7.33333	.84327	.000	4.5580	10.1086
	75%	7.33333	.84327	.000	4.5580	10.1086
	100%	8.66667	.84327	.000	5.8914	11.4420
*The mean difference is significant at the 0.05 level.						

Table of Multiple Comparisons indicates pairwise comparisons of the concentrations using the Tukey HSD test. Results show that there are significant differences between the CHG and the 25% kusay extract ($F = -6.66667, p < .001$), the CHG and the 50% kusay extract ($F = -6.66667, p < .001$), the CHG and 75% kusay extract ($F = -7.33333, p < .001$), and the CHG and 100% kusay extract ($F = -8.66667, p < .001$). In other words, among the five concentrations, the positive control CHG was flagged to be the best concentration. Therefore, the various kusay leaf extracts are not as effective as the positive control.

Summary:

Given that a significant portion of the Filipino population, especially children, suffers from some form of periodontal disease, it is clear that an economic, easily accessible alternative to CHG is needed to reduce the incidence of the disease. Although over-the-counter CHG products are readily available, the price-point may be a deterrent. In addition, prolonged use of CHG is known to cause tooth stains, calculus formation, and taste aberrations. (Eley, 1999; Flotra et al., 1972) CHG may also promote mineral uptake into the biofilm making the biofilm calcified and harder to remove. (Sakaue, et al., 2018) Because of these reasons, the present study was focused on determining if Kusay has any antimicrobial effect on periodontogenic bacteria.

The *Allium tuberosum* rottler ex spreng (Kusay) is an edible plant used in Philippine folk medicine as a topical medicament for mild hematoma and bruises. Currently, there is no data on its activity against bacteria causing periodontal diseases. The aim of this study was focused on determining the susceptibility of two of the most pathologic microorganisms causing periodontal diseases; *Aggregatibacter actinomycetemcomitans* (*A. actinomycetemcomitans*) and *Porphyromonas gingivalis* (*P. gingivalis*) against Kusay ethanol extract. The comparative difference in antimicrobial action between Kusay ethanol extract and commonly prescribed chlorhexidine gluconate (CHG) oral rinse in vitro was also determined.

Standard strains of *A. actinomycetemcomitans* and *P. gingivalis* were used in this study and the experiment was done in the Department of Microbiology at Virgen Milagrosa University Foundation. Different concentrations of Kusay ethanol extract were prepared and the bacterial susceptibility was assessed using the disk diffusion method with CHG as the positive control. The growth inhibition zones of microorganisms around the paper disks were measured in millimeters. The data were analyzed using ANOVA. To determine which among the concentrations was statistically different, a post-hoc test (Multiple Comparisons) was applied.

Tukey HSD test was used as pairwise comparisons of the concentrations.

Both strains of periodontal pathogens exhibited susceptibility to Kusay ethanol extract. There was no significant difference between the susceptibility of the two bacteria against different concentrations of Kusay ethanol extract. When compared to CHG, various concentrations of the Kusay ethanol extract showed significant differences. Amongst the five concentrations, CHG was flagged as the best concentration. Therefore, the various Kusay leaf ethanol extracts were not as effective as the positive control.

Conclusion:

The results of this study suggested that, although not as effective as CHG, Kusay ethanol extract was effective in inhibiting *A. actinomycetemcomitans* and *P. gingivalis*.

Recommendations:

Based upon the limitations placed upon, and the results of this study, we recommend that further studies be done to determine the exact chemical components in Kusay ethanol extract to determine its exact mode of action. We also recommend further testing to determine the minimum concentration in which Kusay ethanol extract is effective. Lastly, we recommend that Kusay ethanol extract be tested on the plethora of bacteria causing periodontitis to determine its wholistic efficacy on the disease.

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Autistic Patient with Dental Diseases, Anemia and Tuberculosis – A Case Report

Susan Sarabia Reyes, MAEd-SPED, FADI

INTRODUCTION

Having patients with special needs such as Autism in a dental office is a challenge, because of the aversion, unpredictable movements, and self-injurious behavior that can affect dental treatment. History of ASD started in the year 1920s, stemming from the belief that autism symptoms were caused by diet (including those high in gluten); in the 1940s that autism was first used to describe children who experience emotional or social issues; in 1943 when a definition for autism was put in place by child psychiatrist Leo Kanner. He described autism as “lack of effective contact, fascination with objects, desire for sameness and non-communicative language before 30 months of age”. In the 1950s, autism was falsely suspected of being caused by cold and uncaring mothers. Parentectomy, or the removal of the afflicted child from his or her parents for long periods of time, was utilized for treatment by a doctor in a study. In 1980, “infantile autism” was listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM) for the first time. The condition was also officially separated from childhood schizophrenia. Today, the term “autism spectrum disorder” is used, and specific tools for diagnosing the severity of a child’s case are developed.

CASE REPORT

One month prior to consult , the 29 year-old female patient presented to our institution together with the mother, complaining of that the patient bites her fingernails and continuously grinds her teeth on a pillow case, and that she has no appetite. The mother thought that could be a dental pain. Two weeks prior to consult, patient had undocumented fever and was given paracetamol 500 mg tab as self medication.

Past Medical History shows no previous hospitalization, no known allergies to food and drugs. Social History reveals that patient was diagnosed with Autism Spectrum Disorder at the age of 5 by a developmental behavioral pediatrician. Patient went to special school but only for only one year due to financial constraint.

Review of System shows that patient had occasional cough. Physical, Extraoral Examination show an abscess formation on the left thigh measuring 3cm x 3cm in diameter, tapping of hands, no eye contact, dry lips.

Intraoral exam was difficult due to aversion but multiple root fragments and multiple carious teeth were seen. Moderate calicular deposits on the upper and lower posterior teeth and gum swelling were noted. Panoramic radiograph is impossible for ASD patients due to their hypersensitivity to sounds and movements. Dental treatment plan were discussed, that dental rehabilitation would be done under general anesthesia. Patient was given requests for diagnostics. The results revealed that patient has pulmonary tuberculosis and anemia. She was referred to internal medicine for co-management and to the general surgery for the cellulitis of the left thigh.

Prior to admission, patient presented with the following results:

Chest X-ray report

Impression: Pulmonary tuberculosis, right upper lung

Hematology

WBC count – 11.8 (Adult: 5 – 10)

Hemoglobin – 81 (Female: 120-140)

Platelet count – 873 ($150-450 \times 10^9/L$)

MCV – 58.8 (80-100fL)

MCH – 17.2 (27-31 pg)

CHEMISTRY TEST

BUN – 3.7 mmol/L (3.0-9.2mmol/L)

Creatinine – 49.6 mmol/L (63.6-110.5 mmol/L)

Sodium – 139.7 mmol/L (135-148 mmol/L)

Potassium – 4 mmol/L (3.6-5.2 mmol/L)

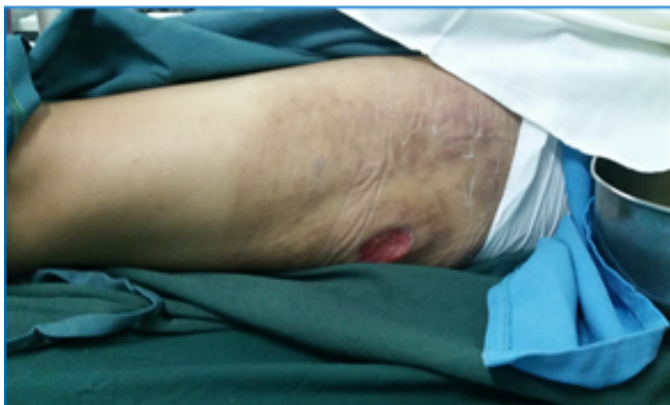
Patient then was admitted to the female ward for co-management.

On the first hospital day, patient was given pulmonary medicine Isoniazid 200 mg/5ml, 7.5 ml/OD, Rifampicin 200 mg/5ml, 10 ml O.D, Pyrazinamide 250 mg/5ml 10 ml O.D. On the second day, peripheral blood smear showed microcytic hypochromic red blood cells, white blood cells count increased with the predominance of neutrophils. Platelet count was adequate. Blood typing and crossmatching were done.

Diphenhydramine 500mg was given intravenously. T.I.V. prior to Blood transfusion. Transfusion of 2 units of packed RBC was performed. In the afternoon of the same day, an abscess on the left thigh measured to 10cmx10 cm in diameter. The patient underwent emergency "I and D" (incision and drainage) and debridement under general anesthesia. Complete blood count was done. The patient was given Clindamycin 600mg T.I.V. On the sixth hospital day another 2 units of packed RBC was duly typed, crossmatched, and transfused. The patient then was also referred to ENT. Finding of impacted cerumen bilaterally was addressed with Aplocyn otic drops, 3 drops each ear three times a day.

	NORMAL VALUES	Oct. 16, 2015	Oct. 24, 2015	Oct. 29, 2015
WBC COUNT	Adult: 5-10, NB: 9-10	11.8	17.1	11.4
HEMOGLOBIN	M:140-170, F:120-140, NB:187-201	81	86	129
HEMATOCRIT	M:0.40-0.50, F:0.38-0.48, NB:0.49-0.55	0.277	0.292	0.422
RBC COUNT	4.5-5.9	4.72	4.62	5.91
NEUTROPHIL	Adult:0.45-0.65, NB:0.40-0.50	0.77	0.83	0.66
LYMPHOCYTE	Adult:0.25-0.50, NB:0.31-0.60	0.08	0.08	0.22
MONOCYTE	0.02-0.06	0.05	0.06	0.05
EOSINOPHILS	0.02-0.04	0.07	0.03	0.01
PLATELET COUNT	150-450	0.03	461	556
MCV	80-100	873	63.2	71.4
MCH	27-31	58.8	18.7	21.9
MCHC	320-360	17.2	296	307
RDW	11.6-14.6	29.3	23.3	29.4

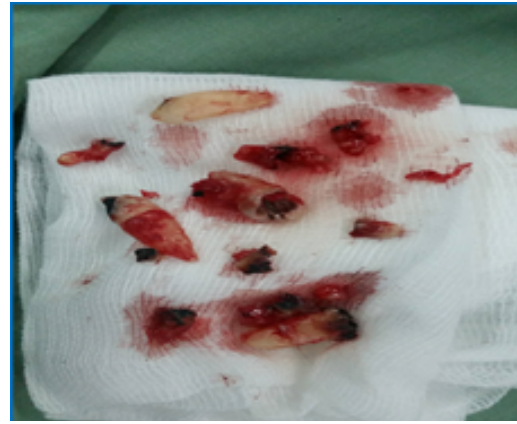
17 days s/p 'E' I and D and Debridement of the left thigh



6th Hospital day - Oct 27

- Blood transfusion of 2 "u" of PRBC properly typed and crossmatched
- Diphenhydramine prior to BT
- Patient seen by ENT – Impacted Cerumen bilaterally
Rx. Aplocyn otic drops; 3 drops each ear; 3x a day





Intra – Op Patient L. A.

23rd hospital day – Nov. 13

**Dental
Surgery
ENT**

Internal Medicine did rounds to the patient decided to discharge the patient

➤ *Home Medications:*

Clindamycin 300 mg q8h x 7 days
Paracetamol 250 mg/5 ml; 10 ml q4h p.r.n.
Isoniazid 200 mg /5ml; 7.5 ml OD
Rifampicin 200 mg/5ml; 10 ml OD
Pyrazinamide 200 mg/5 ml; 10 ml bid
Aplocyn otic drops; 3 drops each ear
Mupiricin ointment 2x a day for the left thigh
Cetirizine 10 mg OD

➤ *Diet as tolerated*

➤ *To come back for follow up after 1 month.*

DISCUSSION

At one time, autism was considered a rare disorder. Today, however, almost everyone knows someone or the family member of someone, who has been diagnosed with autism. Such an increase in the prevalence of autism has led some to speculate that some mysterious toxin in our environment may be the culprit. The scientific evidence for autism having a hereditary component is very strong (Strock, 2004; Volkman & Pauls 2003). Studies have shown that when one family member is diagnosed with autism, the chances are 50 to 200 times higher than another family member who also has autism than in the population as a whole. Research has not yet identified the exact genes that are involved. However, it is likely that multiple genes are involved and that not the same ones are implicated in all people with autism.



Causes of Autism are still unknown but it is shown in abnormalities in brain structure or function. Theories including the link between hereditary, genetics, and medical problems are still under investigation. Some harmful substances ingested during pregnancy also have been associated with an increased risk of autism.

Who are involved in diagnosing ASD:

- Development pediatrician
- Pediatric neurologist
- Child psychiatrist
- Development and behavioral psychologist
- Physical, occupational, and speech/language therapist
- Social workers

Once the child's developmental delay is diagnosed, parent/s and therapist will meet to discuss the appropriate treatment.

What follows is a table of concerns and approaches to use in handling dental problems in autistic children:

Dental situation causing sensory defensiveness	Non pharmacological Methods to decrease sensory defensiveness
High speed drills or suction high pitch noises Sensitive to tooth polishing	- Use hand instrument to clean teeth and remove decay - Visual Schedule/Picture - Allow child to listen to calling or favorite music with headphones during treatment and while waiting in waiting room - Have parent/guardian do deep pressure orally with electric toothbrush
Dental chair changing position	- Inform patient of what is about to happen - Use pictures and visual schedule to show patient what is going to happen
Taste of polishing prophylaxis paste or local anesthetic gel	- Give patient choice of taste flavor by saying "which flavor do you want, mint or bubble-gum, pick one"
Dental light is too bright	- Give patient tinted protective glasses - Inform patient of what is about to happen
Over reactive gag response	- Avoid areas that cause gagging - Inform patient of what is about to happen - Deep touch pressure
Generalized noises of the dental office are distressing (i.e. phone ringing, doors closing)	- Allow child to listen to calming or favorite music with headphones during treatment and while waiting in waiting room
Generalized anxiety	- Allow child to listen to calming or favorite music during treatment and while waiting in waiting room - Short appointments - Allow child to bring favorite toy to appointment - Give rewards to child to reinforce positive behavior

The following are the WHO revised standard case definition (WHO, 2013) which should be used by all health care providers:

1. Presumptive TB
2. Bacteriologically confirmed case of TB
3. Clinically diagnosed case of TB – a patient who does not fulfill the criteria for bacteriologically confirmed TB but has been diagnosed with active TB by a clinician or medical practitioner who has decided to give the patient a full course of TB treatment (based on imaging studies, suggestive histology and extrapulmonary cases without laboratory confirmation). Clinically diagnosed cases subsequently found to be bacteriologically positive (before or after starting treatment) should be reclassified as bacteriologically confirmed.
4. Case of pulmonary TB – any bacteriologically confirmed or clinically diagnosed case of TB involving the lung parenchyma or the tracheobronchial tree. A patient with both pulmonary and extrapulmonary TB should be classified as a case of pulmonary TB.
5. Case of extrapulmonary TB

Doses of first-line anti-tuberculosis drugs in adults and children

Drug*	Recommended Dose in mg/kg Body weight (range)	
	Daily	Three Times Weekly
Isoniazid**		
Children	10 (7-15), maximum 300 mg/day	-----
Adult	5 (4-6), maximum 300 mg/day	10 (8-12), maximum 900 mg/dose
Rifampicin		
Children	15 (10-20), maximum 600 mg/day	-----
Adult	10 (8-12), maximum 600 mg /day	10 (8-12), maximum 600 mg/dose
Pyrazinamide		
Children	35 (30-40), maximum 2,000 mg/ day	-----
Adult	25 (20-30), maximum 2,000 mg/day	35 (30-40), maximum 3,000 mg/dose
Ethambutol		
Children	20(15-25), maximum 1,000mg/day	-----
Adult	15(15-20), maximum 1,600 mg/day	30 (25-35), maximum 2,400 mg/dos

*The recommended daily doses of all 4 antituberculosis medicines are higher in children who weigh less than 25 mg than in adults, because the pharmacokinetics are different (and to achieve the same plasma concentration as in adults, the doses need to be increased).

**Same dosing for treatment of active disease and treatment of latent tuberculosis infection.

International Standards for Tuberculosis Care 3rd edition 2014 by: Philip C Hopewell

Anemia is a common complication of pulmonary tuberculosis. The possible cause of observed anemia in PTB patients might be due to cytokine production and eventually, many biochemical changes detected. Nutritional deficiency and malabsorption syndrome can be the severity of anemia. However, the observation that patients with tuberculosis-associated anemia display an absence of the bone marrow iron, suggests iron deficiency is a possible cause of anemia in patients with tuberculosis. Anemia is a widespread public health problem associated with an increased risk of morbidity and mortality especially in pregnant women and young children and among the special needs populations. It is a disease with multiple causes, both nutritional (vitamin and mineral deficiencies) and non-nutritional (infection) that frequently co-occur.

It is assumed that one of the most common contributing factors is iron deficiency, and anemia resulting from iron deficiency is considered to be one of the top ten contributors to the global burden of disease. In iron deficiency anemia, the red cells appear abnormal and are unusually small (microcytic) and pale (hypochromic). The pallor of the red cells reflects their low hemoglobin content.

Signs of Anemia:

- Pale skin – noticeable in the palms of the hands
- Pale mucous membranes – on the eyelid and wet vermillion part of the lower lip
- Swollen ankles – an indication of the heart having to struggle to do more than usual
- Changes in the nails – such as brittleness, cracking, and a flat surface (a sign of iron deficiency)
- Cracks and soreness at the corners of the mouth



Anemia is considered to be present if the hemoglobin concentration (Hb) of the red cells is below the lower limit of the 95% reference interval for the individual; age, sex, and geographic location. Anemia can develop as a secondary effect of a disease process that does not physically invade the bone marrow or markedly accelerated the destruction of the erythrocyte. One of the most common infections causing anemia is tuberculosis; the extent of anemia associated with tuberculosis depends on the extension of the disease.

Anemia is a common complication of pulmonary tuberculosis. The precise mechanism of anemia in pulmonary tuberculosis is not clearly known, but it is mainly due to inflammation. The possible cause of observed anemia in PTB patients might be due to

cytokines production and eventually many biochemical changes. Nutritional deficiency and malabsorption syndrome can be causes of anemia. However, the observation that patients with tuberculosis-associated anemia display an absence of the bone marrow iron, suggests that iron deficiency is a possible cause of anemia in patients with tuberculosis.

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2. References should be typed double-spaced. They should be alphabetized.
3. All references should provide inclusive page numbers.
4. Journal abbreviations should conform to those used in PubMed.
5. A maximum of six authors per article can be cited; beyond that, name the first three and add "et al."
6. The style/punctuation approved by JPDA conforms to APA format

Journal Article

Padua FR, Paspe MG. Antinuclear antibody in the rheumatic and non-rheumatic diseases among Filipinos. *Acta Med Philippina*. 1990;26(2):81-85

One to Six Authors (Commentary, Online)

Krause RM. The origin of plague: old and new. *Science*. 1992;257:1073-1078

Barry JM. The site of origin of the 1918 influenza pandemic and its public health implications. [Commentary]. *JTranslational Med*. January 20, 2004;2(3):1-4. <http://www.translational-medicine.com/content/2/1/3>. Accessed November 18, 2005.

Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. The continuing epidemics of obesity and diabetes in the US. *JAMA*. 2011;286(10):1195-1200.

More than Six Authors

McGlynn EA, M.Asch S, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. June 26, 2003;348(26):2635-2645.

Authors Representing a Group

Moher D, Schulz KF, Altman D for the CONSORT Group. The CONSORT statement: revised recommendations for improving the quality of reports of parallel-group randomized trials. *JAMA*. 2011;285(15):1987-1991.

Book

Byrne, DW. Publishing your medical research paper: What they don't teach in medical school. Baltimore: Williams & Wilkins, 1998.

World Wide Web

The key and critical objectives of JAMA. <http://jama.ama-assn.org/misc/aboutjama.dtl>. Accessed April 4, 2007.

Tables

1. Cite all tables consecutively in the text and number them accordingly.
2. Create tables preferably using Microsoft Excel with one table per worksheet.
3. Tables should not be saved as image files.
4. The content of tables should include a table number (Arabic) and title in capital letters above the table, and explanatory notes and legend as well as definitions of abbreviations used below.
5. Font consistent with other text, size 8.
6. Each table must be self-explanatory, being a supplement rather than a duplicate of information in the text.
7. Up to a maximum of five (5) tables are allowed.

Figures and Graphs

1. Figures or graphs should be identified by Arabic Numeral/s with titles and explanations underneath.
2. The numbers should correspond to the order in which the figures/graphs occur in the text. It is recommended that figures/graphs also be submitted as image files (preferably as .jpeg or gif files) of high resolution.
3. Provide a title and brief caption for each figure or graph. Caption should not be longer than 15-20 words.
4. All identifying data of the subject/s or patient/s under study such as name or case number, should be removed.
5. Up to a maximum of five (5) figures and graphs are allowed.

Illustrations and Photographs

1. Where appropriate, all illustrations/photographic images should be at least 800 x 600 dpi and submitted as image files (preferably as .jpeg or .gif files).
2. For photomicrographs, the stain used (e.g., H&E) and magnification (e.g., X400) should be included in the description.
3. Computer-generated illustrations which are not suited for reproduction should be professionally redrawn or printed on good quality laser printers. Photocopies are not acceptable.
4. All letterings for illustration should be done professionally and should be of adequate size to retain even after size reduction.
5. Figure legends should be numbered sequentially, typed double-spaced on a separate sheet of paper. Give the meaning of all symbols and abbreviations used in the figure.
6. Up to a maximum of five (5) illustrations/paragraphs are allowed.

N.B.: For tables, figures, graphs, illustrations and photographs that have been previously published in another journal or book, a note must be placed under the specific item stating that such has been adapted or lifted from the original publication. This should be also referenced in the References portion.

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1. Upon receipt of the manuscript, the Editor shall review the submission, check if it has met aforementioned criteria and consult with members of the Editorial Board to decide whether it shall be considered for publication or not.
2. Within one (1) week of submission, authors shall be notified through e-mail that their manuscript either (a) has been sent to referees for peer-review or (b) has been declined without review.

3. The JPDA implements a strict double blind peer review policy. For manuscripts that are reviewed, authors can expect an initial decision within forty five (45) days after submission. There may be instances when decisions can take longer than 45 days, in such cases, the editorial assistant shall inform the authors. The editorial decision for such manuscripts shall be one of the following: (a) acceptance without further revision, or (b) major manuscripts revision and resubmission.

4. Accepted manuscripts are subject to editorial modifications to bring them in conformity with the style of the journal.

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The abstract should contain no more than 200 words with a structured format consisting of the objective/s, methodology, results and conclusion. A manuscript for original articles should not exceed 25 typewritten pages (including tables, figures, illustrations and references) or 6000 words.

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Review articles provide information on the "state of the art." JPDA encourages that reviews not only summarize content understanding of a particular topic but also describe significant gaps in the research, and debates. The abstract should be from 50 to 75 words and should not be structured. A manuscript for reviews should not exceed 15 typewritten pages (including tables, figures, illustrations and references) or 4000 words.

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