

# **ORAL HEALTH INFORMATION BOOKLET 2012**

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## **Vision**

Together towards a Healthy  
Nation

## **Mission**

To improve Oral Health  
through effective, equitable,  
affordable, accessible, safe &  
sustainable Oral Health Care in  
Brunei Darussalam

# ORGANISATION STRUCTURE

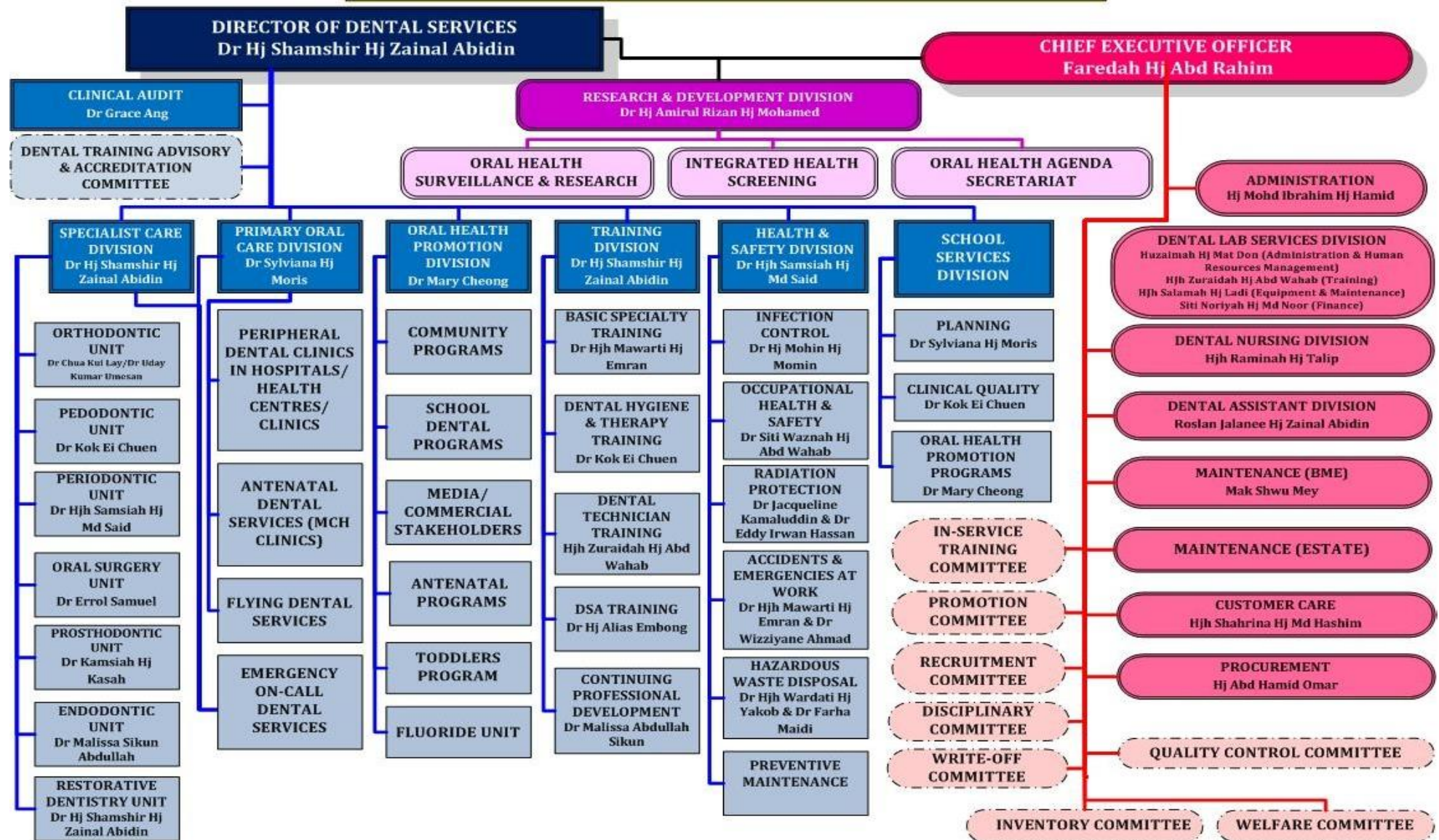


Figure 1.2 Department of Dental Services Organisational Structure

# RESEARCH AND DEVELOPMENT DIVISION

Research and Development (R&D) Division was established under the Department of Dental Services in January 2008, to provide the Ministry of Health and other relevant national, regional and international Authorities with the essential oral health data.

The R & D Division's primary function is to ensure the implementation of a more proper scientific system that is essential to collect valid and reliable data on the oral health status of the population of Negara Brunei Darussalam.

In addition to providing this epidemiological information, this division will also give other significant oral health and related information which are needed by oral health policy- and decision-makers, health planners and administrators. This information includes:

1. Risk factors to oral health.
2. Oral health-related quality of life.
3. Oral health services coverage and utilisation of oral health services by the population in general and the target groups in particular.
4. Intervention strategies and the oral health care provided.
5. Administrative procedures.
6. Quality of oral health care and services.

This information gathered can also contribute to the so-called WHO Global Oral Health Data Bank which, among other things, will show the trends and burden of oral diseases in most countries. These data can then be used to monitor oral diseases and trends over time and measure progress in oral health promotion and oral disease prevention. They can also be used to assess the impact of the Oral Health System as to whether it is effective or it needs to be better rationalised and adjusted and developed accordingly.

On top of these, we also need vital information on the **Input** into the Oral Health Care Systems, the **Process** of delivering these systems, and the **Output** and **Outcome** from the services delivered. All these information can only be collected efficiently with the establishment of a dynamic Oral Health Information System under the R & D Division.

# DEMOGRAPHY

Brunei Darussalam conducted the first population census in 1971. The fifth decennial 2011 census of population and housing has been completed by the Department of Economic Planning and Development, Prime's Minister's Office, Brunei Darussalam.

**Table 1.4** Population Demography (2009-2012)

Estimated Population		2009	2010	2011	2012
Total	(in thousands) :	380.1	386.8	393.372	399.8
Male	(in thousands) :	196.3	199.8	203.149	206.7
Female	(in thousands) :	183.8	187.0	190.223	193.1
Sex ratio	(M / 100F) :	107	107	107	107
Persons / sq.km	:	66	67	68	69
Annual rate of increase	:	1.4%	1.8%	1.7%	1.6%
<b>Age Structure (in thousands)</b>					
0 - 4	:	29.3	29.3	30.331	31.1
5 - 19	:	100.6	102.4	104.058	103.5
20 - 54	:	214.9	218.8	222.541	226.0
55 - 64	:	21.8	22.2	22.556	24.5
65 & Over	:	13.5	13.6	13.886	14.7
<b>Race (in thousands)</b>					
Malay *	:	249.7	254.1	258.465	262.8
Chinese	:	39.2	39.9	40.534	41.0
Others	:	91.2	92.8	94.373	96.0
<b>District (in thousands)</b>					
Brunei-Muara	:	270.4	275.3	279.924	285.3
Belait	:	58.7	59.7	60.744	61.5
Tutong	:	42.4	43.1	43.852	44.1
Temburong	:	8.6	8.7	8.852	8.9

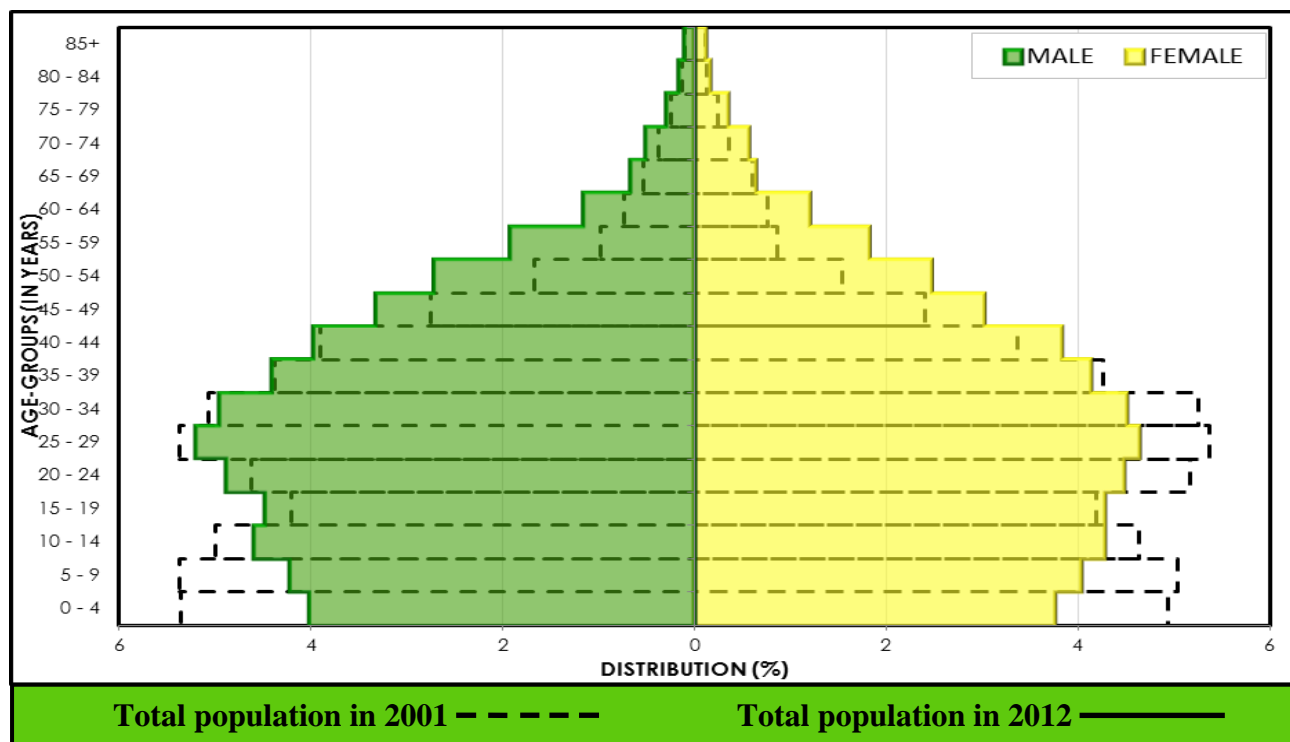
Note:

\* - Including other Indigenous Groups of the Malay race namely Belait, Bisaya, Brunei, Dusun, Kedayan, Murut and Tutong.

Source:

Department of Economic Planning and Development, Prime Minister's Office.

# POPULATION PYRAMID



Note:

Population pyramid shows percentage distribution of population by gender and age-groups. For example, <sup>85+</sup>(0 - 4) age-group for the year 2012 is represented with 7.8% of total population in which 4.0% and 3.8% are male and female population respectively.

Figure 1.5a Population Pyramid 2012

## POPULATION TREND OF BRUNEI DARUSSALAM (1911-2012)

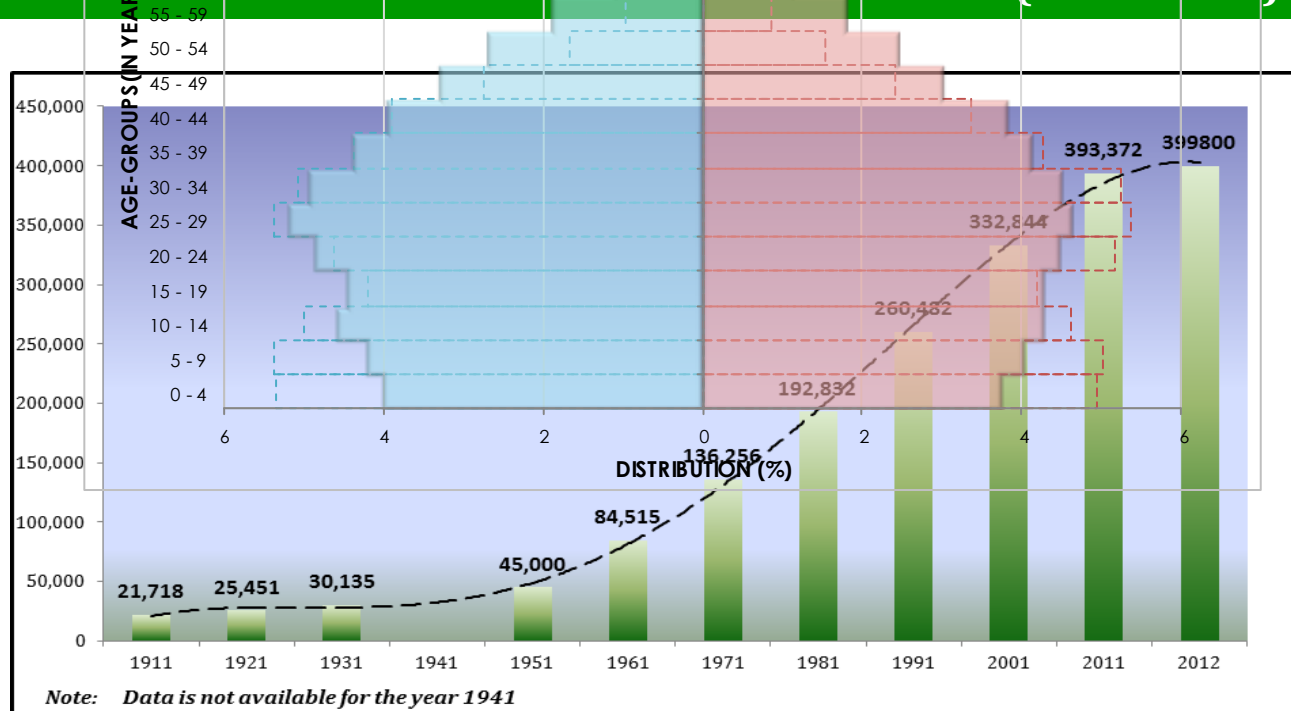
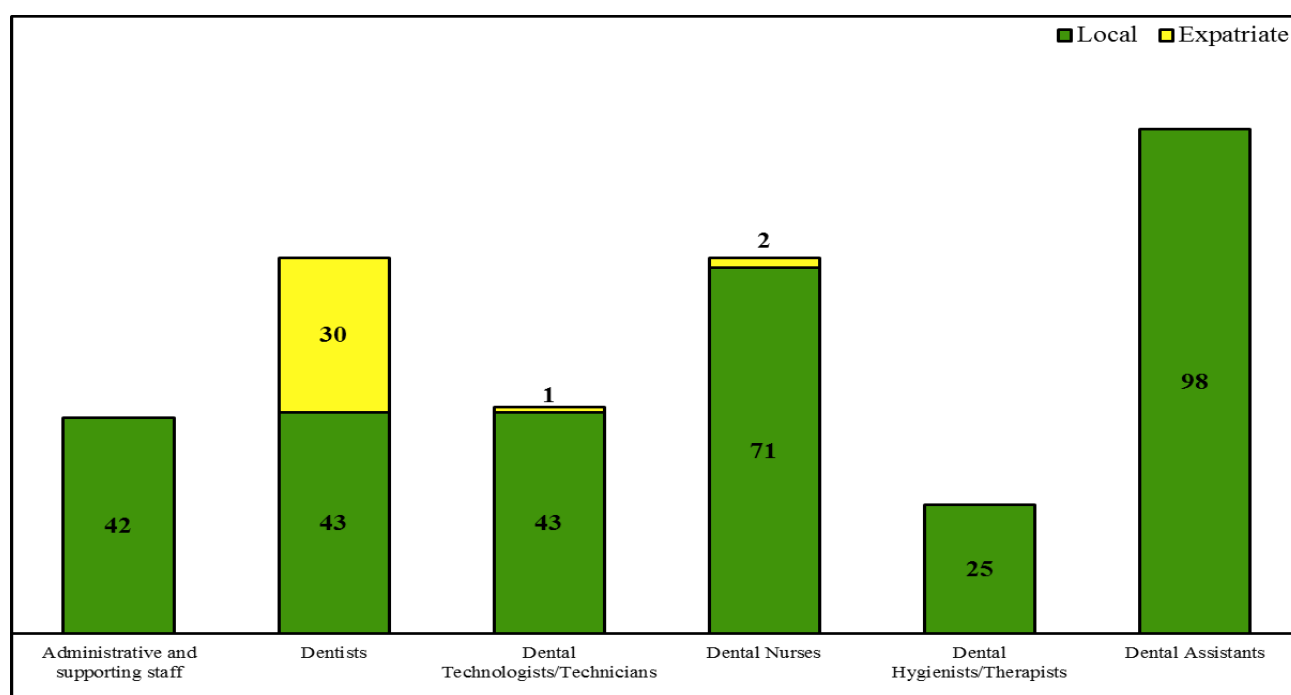


Figure 1.5b Population trend of Brunei Darussalam (1911-2012)

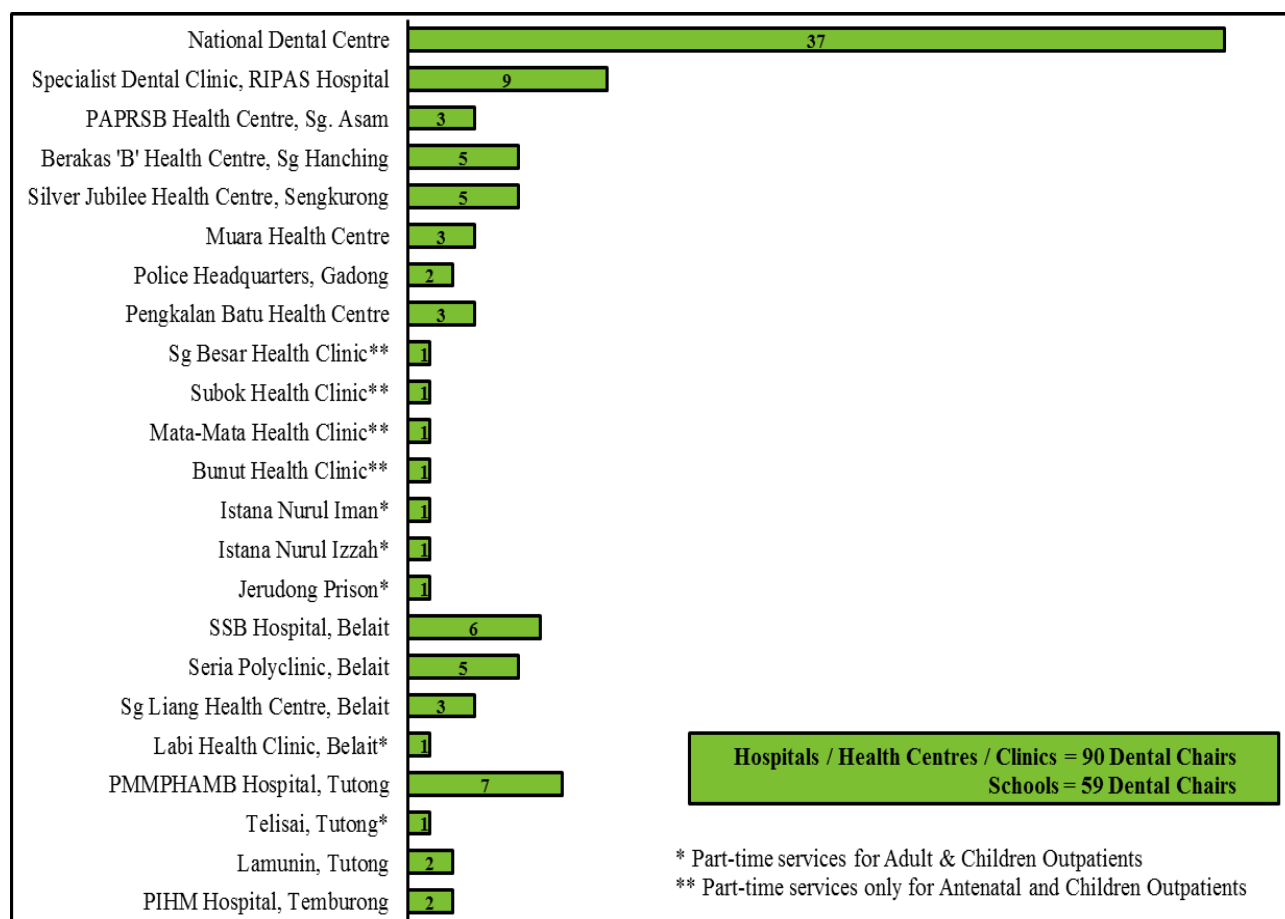


# HUMAN RESOURCES



**Figure 1.6** Number of human resources in the Department of Dental Services by each discipline (2012)

# DISTRIBUTION OF DENTAL CHAIRS



**Figure 1.7** Distribution of dental chairs at Hospitals/Health Centres/Clinics and schools

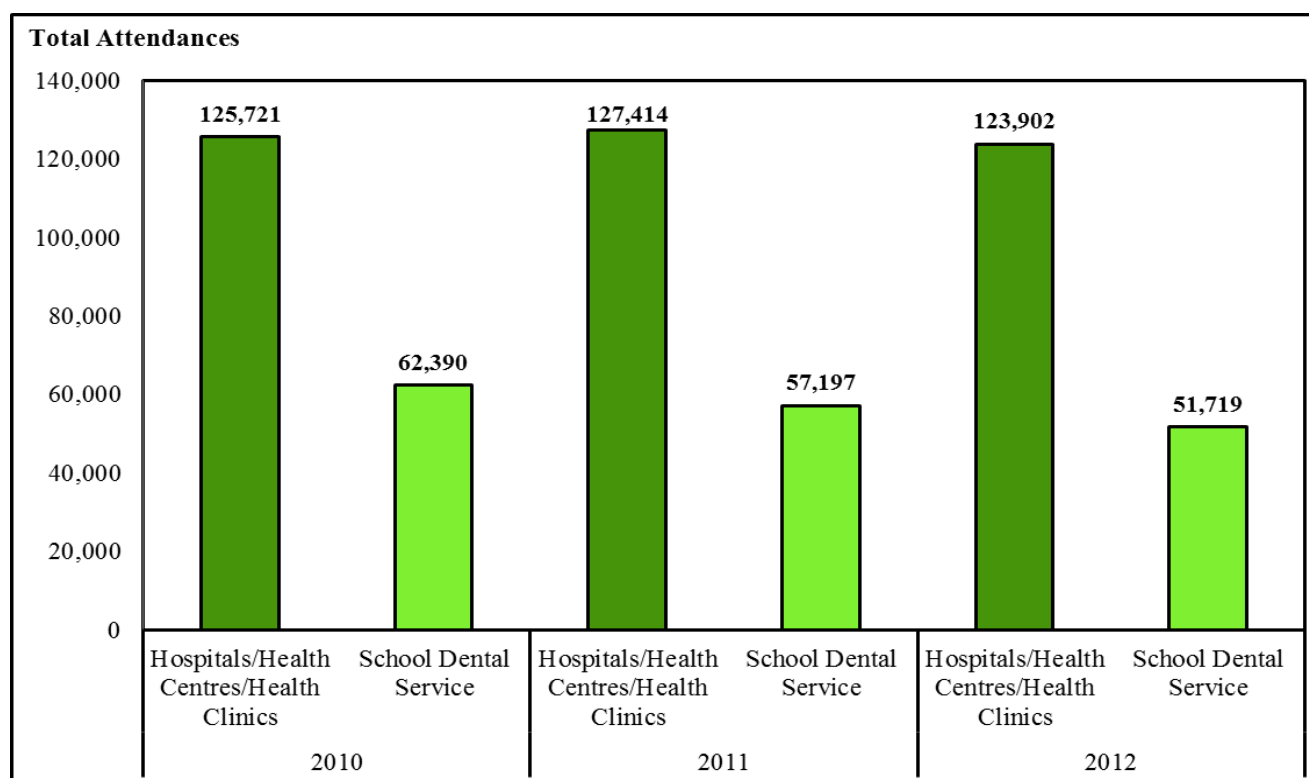


# GOVERNMENT DENTAL EXPENDITURES

**Table 1.8** Comparison of budget allocation between the Ministry of Health and the Department of Dental Services (2005-2012)

Budget Year	Department of Dental Services (B\$ Millions)	Ministry of Health (B\$ Millions)	Percentage of budget allocation of the Department of Dental Services from the Ministry of Health
2005-2006	8.85	240.86	3.7
2006-2007	8.55	244.33	3.5
2007-2008	10.04	259.72	3.9
2008-2009	10.20	264.44	3.9
2009-2010	11.20	286.82	3.8
2010-2011	10.87	295.41	3.6
2011-2012	13.16	306.85	4.2
2012-2013	12.60	347.76	3.6

## UTILISATION OF GOVERNMENT DENTAL SERVICES



**Figure 1.9** Total attendances in Brunei Darussalam (2010-2012)

# KEY PERFORMANCE INDICATORS

**Table 1.10a** WHO and FDI global oral health goals for the year 2000 & 2010

Age (years)	WHO / FDI global oral health goals		Oral health status in Brunei	
	2000	2010	1987	1999
5-6	50% should be caries-free	90% should be caries free	3 % caries free	11.3% caries free
12	3 or fewer DMFT	1 or fewer DMFT	4.91 DMFT	4.82 DMFT
18	85% should retain all their teeth	No loss of teeth to caries or periodontal disease	No data available	82.2% retain all teeth
35-44	50% reduction in 1981 levels of edentulousness	No more than 20% edentulous 90% with a minimum of 20 functional teeth	No data available	14.4 DMFT No data available in level of edentulousness
>65	25% reduction in 1981 level of edentulousness	No more than 5% edentulous 75% with a minimum of 20 functional teeth	No data available	No data available

DMFT - Mean number of untreated Decayed, Missing and Filled permanent teeth

WHO - World Health Organization

FDI - Federation Dentaire Internationale (FDI) World Dental Federation

**Table 1.10b** Key Performance Indicators for the Department of Dental Services

Goal (FDI, WHO, IADR)	Key Performance Indicators	Baseline	Measurement Indicators	
			2020	2035
Dental Caries				
To increase the proportion of caries free 6-year olds by X%	Percentage caries-free 6-year olds	11.3% (1999)	40%	80%
To reduce the DMFT (Decayed, Missing, Filled Teeth) particularly the D (Decayed) component at age 12 years	DMFT score of 12 year olds	4.82 (1999)	2 or less	1 or less
Periodontal Disease				
To reduce the prevalence of active periodontal infection (with or without loss of attachment) in all ages by X%	Percentage prevalence of active periodontal disease of 10-12 year olds (BPE Code 1)	76.4% (1999)	50%	10%
	Percentage prevalence of active periodontal disease of 35-44 year olds (BPE Code 1)	43.4% (1999)	30%	10%
To increase the proportion of people in all ages with healthy periodontium (gums & supporting bone structure) by X%	Percentage prevalence of healthy periodontium of 10-12 year olds (BPE Code 0)	1.3% (1999)	30%	70%
	Percentage prevalence of healthy periodontium of 35-44 year olds (BPE Code 0)	0.0% (1999)	30%	70%
Health Care Services				
To establish evidence-based plans to create human resources that can provide care that are appropriate to the cultural, social, economic and morbidity profiles of all groups within the population	Dentist : Population ratio	1 : 7,960 (2008)	1 : 5,500	1 : 4,000
	Nurse : 0 -16 yr Population ratio	1 : 1,655 (2008)	1 : 1,200	1 : 800
	Dentist : Technician ratio	2 : 1.4 (2008)	2 : 1.8	2 : 2.5
	Dentist : Dental Assistant ratio	1 : 1.5 (2008)	1 : 1.8	1 : 2
To increase the proportion of the population with access to adequate oral health care	Percentage of Oral Health Care Coverage	21% (2008)	40%	80%

# UTILISATION OF GOVERNMENT DENTAL SERVICES

## COVERAGE

A measure of the extent to which the services rendered cover the potential need for these services in a community.

Formulae:  $\frac{\text{Total New Patients}}{\text{Total Population}} \times 100$

## OUTPATIENT

A patient who is a walk-in patient (not an inpatient).

## APPOINTMENT

An arrangement to meet the doctor for consultation/treatment at a particular time and place.

## CATCHMENT AREA

The area from which people are allocated to a particular Hospital or Health Centre.

## PRODUCTIVITY

The rate at which dental services are produced especially output per year.

## PATIENT COMPLETION

The degree or extent to which a patient follows or completes a prescribed diagnostic treatment of procedures.

Formulae:  $\frac{\text{Total Completed Patients}}{\text{Total New Patients}} \times 100$

**Table 2.1a** Total attendances (outpatients and appointments) by Hospitals/Health Centres/Clinics for each age group in Brunei-Muara district (2012)

Treatment Centre	Age group																All combined							
	0-5				6-12				13-19				20-55								>55			
	OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT	
	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN
National Dental Centre	180	323	88	107	417	1,308	937	894	1,319	984	3,481	1,103	9,944	66	9,870	2,393	1,683	5	1,848	133	13,543	2,686	16,224	4,630
Hospital-based																								
RIPAS	60	0	373	122	52	0	465	253	151	0	410	114	622	29	2,714	121	92	1	509	25	977	30	4,471	635
Health Centres																								
Sg Assam	30	211	3	5	130	590	10	20	482	148	78	11	3,282	0	471	0	418	0	144	0	4,342	949	706	36
Sg Hanching	60	586	0	9	137	1,199	10	77	565	416	42	76	4,732	0	424	23	979	0	229	0	6,473	2,201	705	185
Sengkurong	66	639	0	41	99	1,604	14	34	820	545	117	78	5,919	0	1,008	75	870	0	301	2	7,774	2,788	1,440	230
Muara	39	146	12	0	50	500	5	24	472	171	62	72	3,709	18	441	8	598	0	202	0	4,868	835	722	104
Police	10	168	0	20	10	315	1	28	101	77	25	18	1,661	21	468	28	3	3	1	1	1,785	584	495	95
Pengkalan Batu	10	106	0	4	13	234	2	34	157	87	18	30	884	20	119	18	113	0	12	0	1,177	447	151	86
Health Clinics																								
Sg Besar	0	156	0	0	0	115	0	0	1	0	0	0	28	0	51	0	0	0	0	0	29	271	51	0
Subok	0	169	0	0	0	136	0	0	0	0	0	0	39	0	46	0	0	0	0	0	39	305	46	0
Mata-Mata	0	487	0	19	0	1,058	0	62	1	5	1	0	53	0	138	0	0	0	0	0	54	1,550	139	81
Bunut	0	258	0	2	0	713	0	23	2	331	0	52	47	0	37	0	0	0	0	0	49	1,302	37	77
Prison	0	0	0	0	0	0	0	0	0	0	0	0	91	0	0	0	34	0	0	0	125	0	0	0
CDC	0	85	0	151	0	14	0	126	0	0	0	25	0	1	0	5	0	0	0	0	0	100	0	307
All combined	455	3,334	476	480	908	7,786	1,444	1,575	4,071	2,764	4,234	1,579	31,011	155	15,787	2,671	4,790	9	3,246	161	41,235	14,048	25,187	6,466

**Table 2.1b** Total attendances (outpatients and appointments) by Hospitals/Health Centres/Clinics for each age group in Belait district (2012)

Treatment Centre	Age group																All combined							
	0-5				6-12				13-19				20-55								>55			
	OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT	
	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN
Hospital-based																								
SSB Hospital	75	472	102	90	142	1,095	123	176	591	286	195	120	4,678	2	1,660	80	1,049	0	268	26	6,535	1,855	2,348	492
Health Centres																								
Seria	14	151	0	55	50	375	180	82	188	106	909	58	2,312	1	1,353	14	597	0	290	0	3,161	633	2,732	209
Sg Liang	17	166	0	75	32	332	0	147	188	92	41	38	1,559	0	326	0	387	0	106	0	2,183	590	473	260
Health Clinics																								
Labi <sup>a</sup>	3	0	0	0	7	0	0	0	4	0	0	0	73	0	2	0	13	0	0	0	100	0	2	0
Flying Services																								
Sukang	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0
Melilas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All combined	109	789	102	220	245	1,802	303	405	971	484	1,145	216	8,622	3	3,341	94	2,046	0	664	26	11,993	3,078	5,555	961

<sup>a</sup>Labi – Thursday morning only

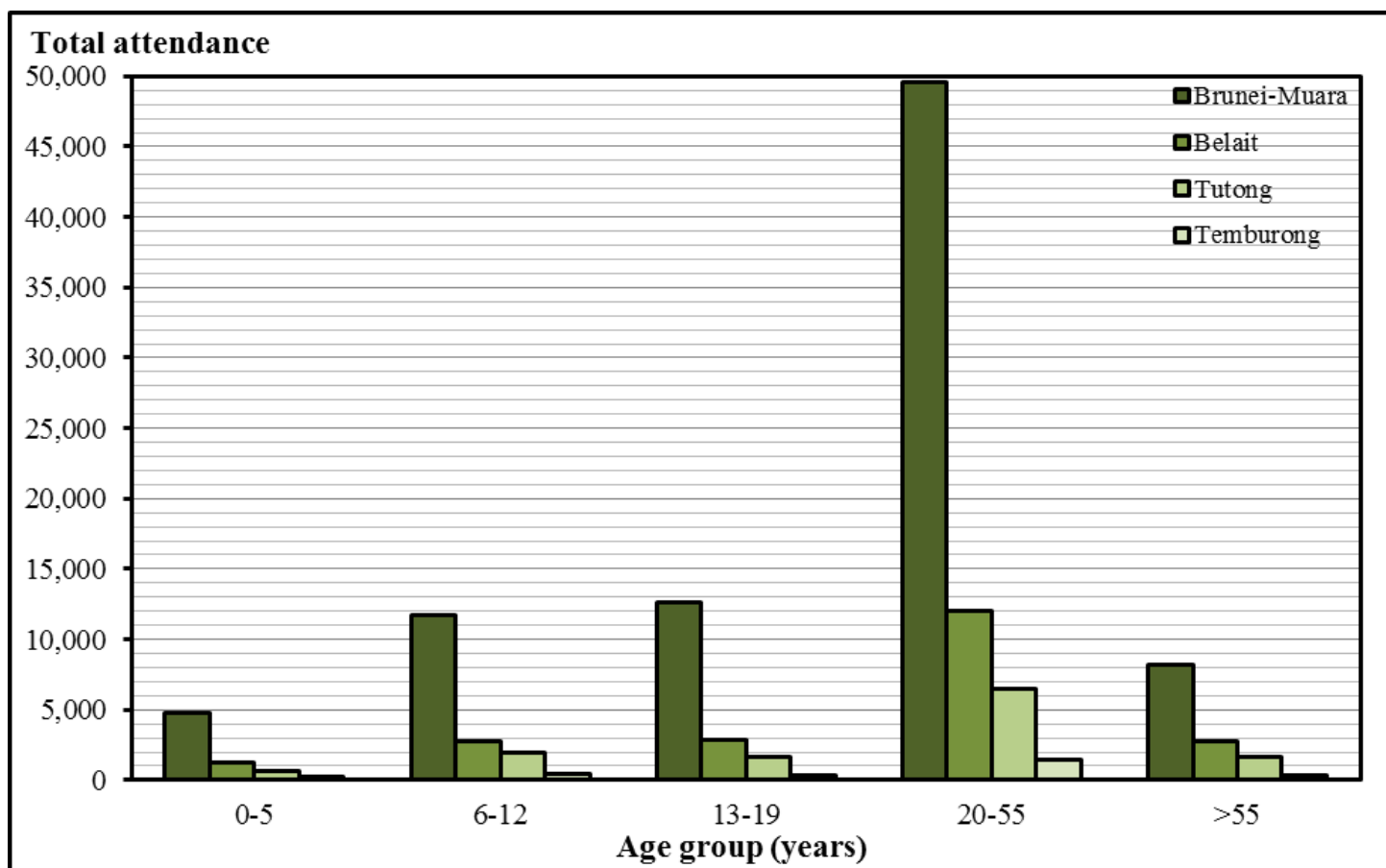
**Table 2.1c** Total attendances (outpatients and appointments) by Hospitals/Health Centres/Clinics for each age group in Tutong district (2012)

Treatment Centre	Age group																All combined							
	0-5				6-12				13-19				20-55								>55			
	OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT	
	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN
Hospital-based																								
PMMPMHAMB Hospital	27	309	31	26	62	1,288	110	96	780	251	373	36	4,007	0	1,093	0	1,168	0	384	0	6,044	1,848	1,991	158
Health Centres																								
Telisai	0	41	0	0	0	54	0	0	1	7	0	0	2	0	0	0	1	0	0	0	4	102	0	0
Lamunin	1	162	0	0	6	357	0	5	110	71	23	9	1,136	3	204	0	250	0	24	0	1,503	593	251	14
Flying Services																								
Mapol	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
Supon Besar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All combined	28	512	31	26	68	1,699	110	101	885	329	397	45	5,149	3	1,297	0	1,281	0	396	0	7,411	2,543	2,231	172

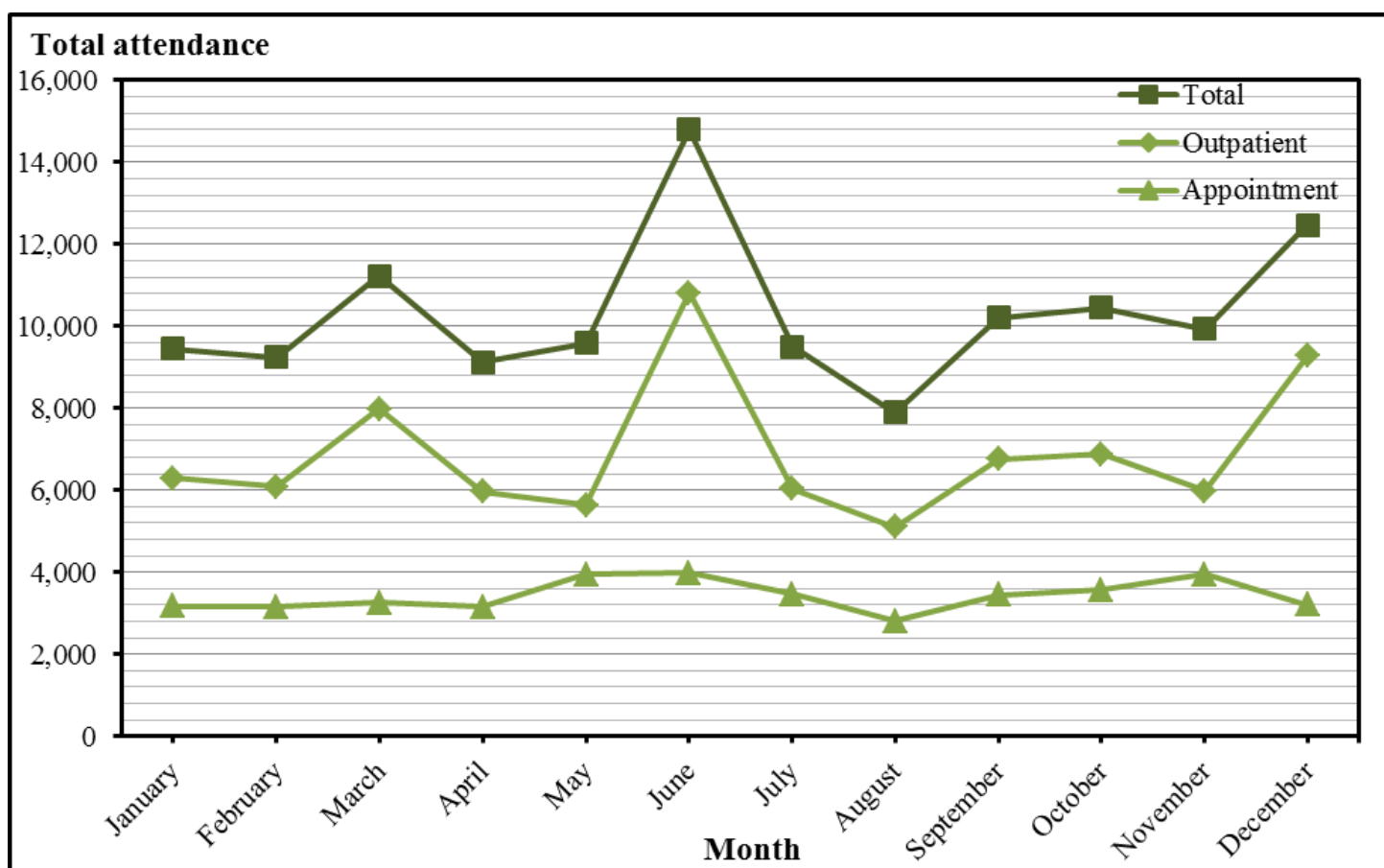
**Table 2.1d** Total attendances (outpatients and appointments) by Hospitals/Health Centres/Clinics for each age group in Temburong district (2012)

Treatment Centre	Age group														All combined									
	0-5				6-12				13-19				20-55						>55					
	OP		APPT		OP		APPT		OP		APPT		OP		APPT		OP		APPT					
	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN	DO	DN				
Hospital-based																								
PIHM Hospital	0	200	0	27	0	392	1	49	123	169	52	31	1,188	0	292	0	268	0	78	0	1,579	761	423	107
All combined	0	200	0	27	0	392	1	49	123	169	52	31	1,188	0	292	0	268	0	78	0	1,579	761	423	107

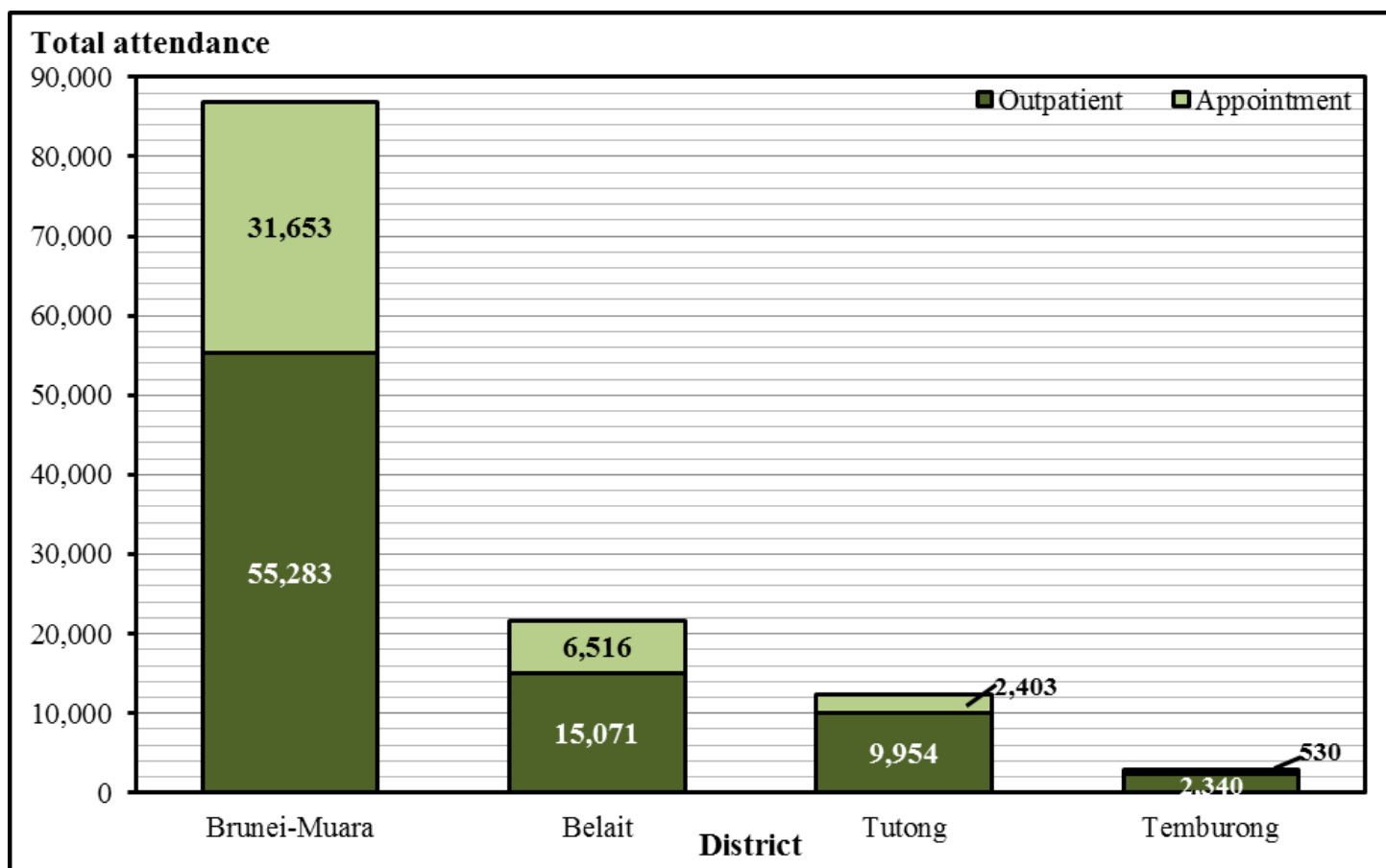




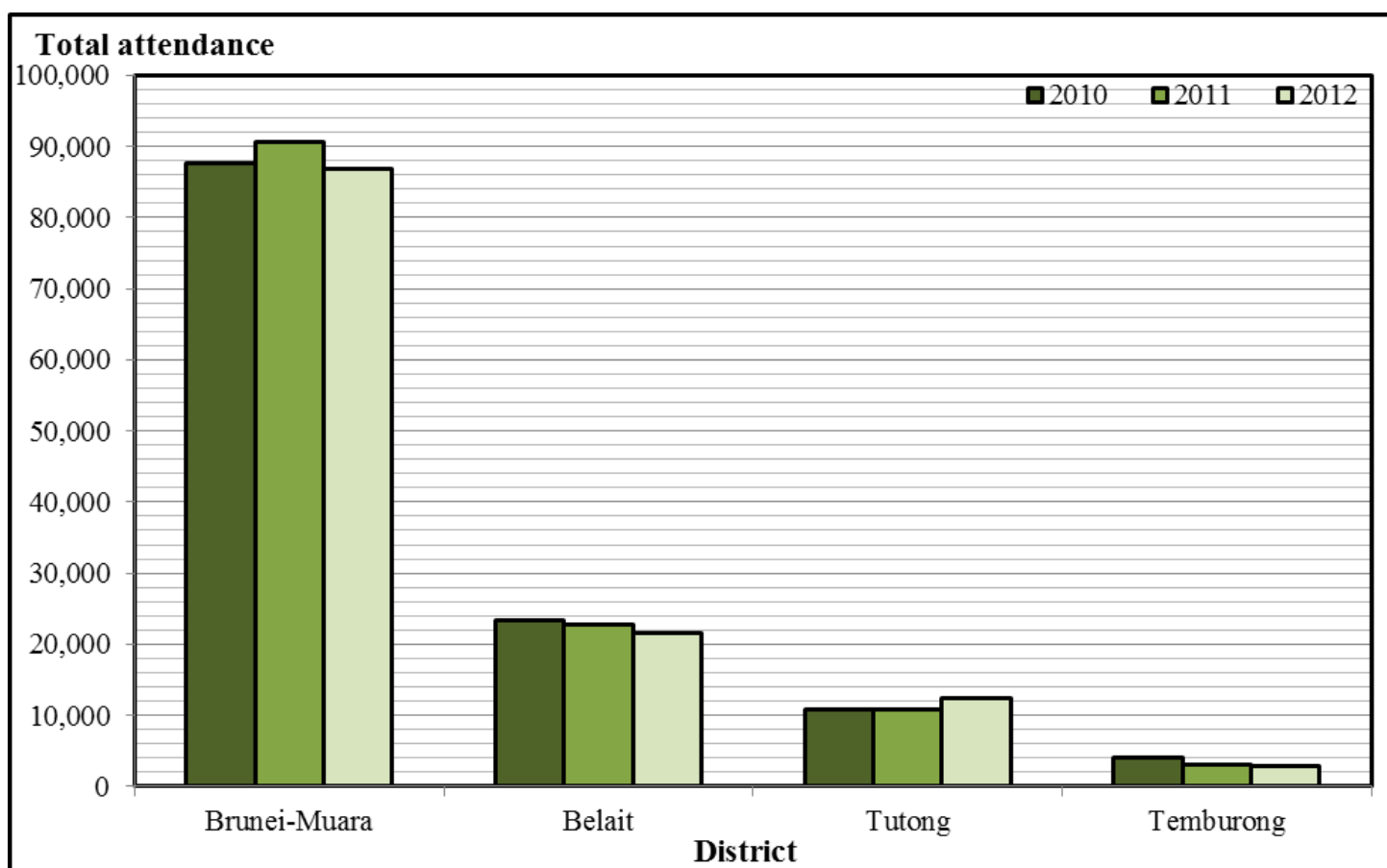
**Figure 2.1a** Total attendances by age group for each district (2012)



**Figure 2.1b** Total attendances by month for the whole state (2012)



**Figure 2.1c** Total attendances by district (2012)



**Figure 2.1d** Total attendances by district (2010-2012)

# SCHOOL DENTAL SERVICES

School Dental Services provide oral health care services to the schoolchildren of Brunei Darussalam, in such a way as to improve and maintain their oral health at an optimal level, through various preventive and promotive means, and by ensuring that the oral health care delivered is appropriate and of the highest quality possible.

These include:

1. Providing appropriate preventive, curative, restorative and rehabilitative oral health care to these children.
2. Referral of those children who require oral health care that is beyond the competency of the dental nurses, to dental officers and specialists.
3. Promoting the children's oral health through various oral health promotion programmes and activities to these children and in collaboration with the School Authorities, communities and parents/guardians.
4. Collaborating with the Ministry of Education in the Health Promoting School Programme to promote oral health in schools.

Since 2007, mobile dental squads consisting of 2-5 school dental nurses in each team use portable equipment to treat schoolchildren in schools without a static school dental clinic. Instead of having target groups, the teams now aim to complete at least 80% of all the students (Pra to Y6) before moving onto another school. They also concurrently treat students in their designated static dental clinics throughout the year.

**Table 3.1a** Mobile squad teams in Brunei-Muara district (2012)

<b>XCAV8'S (4 Nurses)</b>	<b>K 9 (4 Nurses)</b>	<b>PEARL (5 Nurses)</b>	<b>NASA (4 Nurses)</b>	<b>OMEGA (5 Nurses)</b>
1. SR PPSDSB Mata-Mata	1. SR Bendahara Lama	1. SR Amar Pahlawan	1. SR Pular Ulak	1. SR Delima Satu
2. SR SOAS Muara	2. SR PAPB Peramu	2. SR PDJ Kg Setia	2. SR Jerudong	2. SR Serasa
3. SR Dato Marsal	3. SR Sg Kebun	3. SR Anggerek Desa	3. SR BS Bunut	3. SM Chung Hwa
4. SR Kiarong	4. SR Lumapas	4. SR Pulaie	4. SR Sengkurong	4. Sekolah St Andrew's
5. SR DMW Lambak	5. SR Pengkalan Batu	5. SR Yayasan SHHB	5. SR Mabohai	5. SR Raja Isteri Fatimah
6. SR Masin*	6. SR PB Limau Manis	6. SR Sg Siamas	6. SR Beribi Telanai*	6. SR Mentiri
7. SR Batu Marang*	7. SR Saba Darat	7. SR Dato Othman*	7. SR Rimba Satu*	7. SR HMS Sg Hanching*
8. SR Tanah Jambu*	8. SR Pintu Malim	8. SR SAB Sg Besar*	8. SR AHMY Katimahar*	8. SR OKBI Subok*
9. SR NAR Menunggul*	9. SR Junjungan*	9. SR HMJM Kiulap*	9. SR Bebuluh*	9. SR Kg Mata-Mata*
10. SR Kapok*	10. SR Kasat*	10. SR Hj Tarif Tamoi*	10. SR OKBI Kilanas*	10. SR Dato Godam*
11. SR Dato Basir*	11. SR Dato Ahmad*			11. SR TK Sg Bunga*
12. SR Mulaut	12. SR Katok*			12. SR Jln 49 Lambak Kanan*

\*Non-Static School Dental Clinics (Schools without a dental surgery)

**Table 3.1b** Mobile squad teams in other districts (2012)

<b>TUTONG</b>		<b>BELAIT</b>		<b>TEMBURONG</b>	
<b>TOPAZ (3 Nurses)</b>	<b>PRIMAROSA (3 Nurses)</b>	<b>ESMERALDE (2 Nurses)</b>	<b>HEBAT (4 Nurses)</b>	<b>TLC (3 Nurses)</b>	<b>DENTEM (4 Nurses)</b>
1. SR Telisai	1. SR Kiudang	1. SR Muda Hashim	1. SR Muhd Alam	1. SR Kuala Belait	1. SR SH Bangar
2. SR OKAWSD Kupang	2. SR Keriam	2. SR Penanjong	2. SRPSNPMY Lorong 3	2. SR Ahmad Tajudin	2. SR Selangan*
3. SR Bukit Beruang	3. SR Birau*	3. SR Bukit Udai*	3. SR Panaga	3. SR PSJPAM Pandan	3. SR Kenua*
4. SR Bakiau*	4. SR AR Tg Maya*	4. SR Lamunin*	4. SR Sg Liang	4. SR Sg Teraban	4. SR Semabat*
5. SR Sinaut*	5. SR Sengkarai*	5. SR Kuala Tutong*	5. SR Lumut	5. Sekolah Chung Hwa	5. SR Selapon*
	6. SR Ukong*		6. Sekolah Chung Ching	6. SR PSB SOAS*	6. SR Batu Apoi*
	7. SR Bt Penggal*		7. SR Sg Tali II*		7. SR Negalang*
					8. SR Piasau-Piasau*
					9. SR Labu Estate*
					10. SR Senukoh*

\*Non-Static School Dental Clinics (Schools without a dental surgery)

**Table 3.2** Percentage coverage (number of new patients) by districts for each age group (2012)

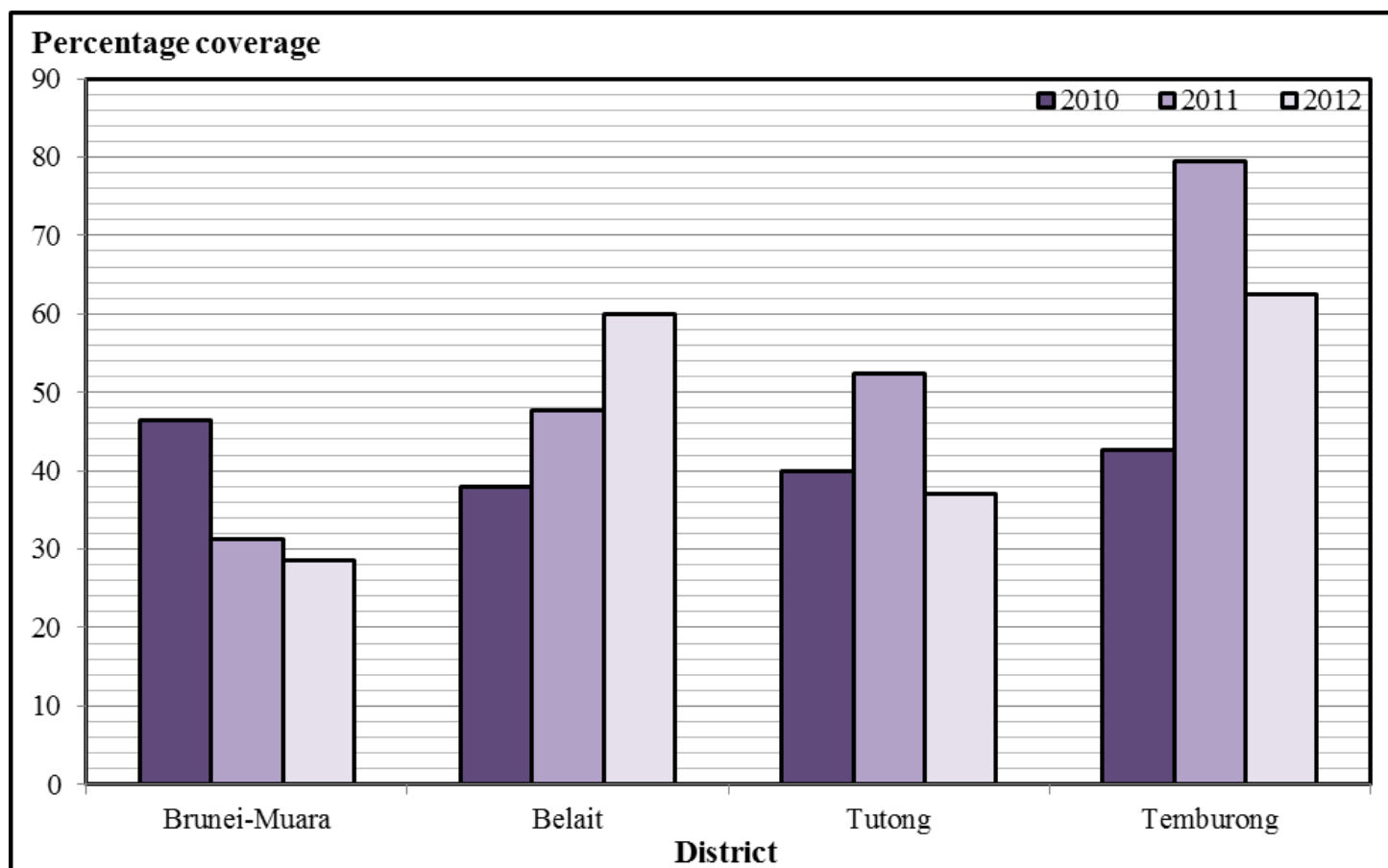
District	School population	Consented	Age group			All combined	% Coverage
			0-5	6-12	13-19		
Brunei-Muara	43,431	14,468	1,112	11,311	30	12,453	28.6
Belait	9,657	3,665	491	5,297	0	5,788	59.9
Tutong	5,472	1,961	407	1,614	2	2,023	37.0
Temburong	1,196	654	62	661	25	748	62.5
<b>All combined</b>	<b>59,756</b>	<b>20,748</b>	<b>2,072</b>	<b>18,883</b>	<b>57</b>	<b>21,012</b>	<b>35.1</b>

Note: All treatments in Schools are done by Dental Nurses/Therapists

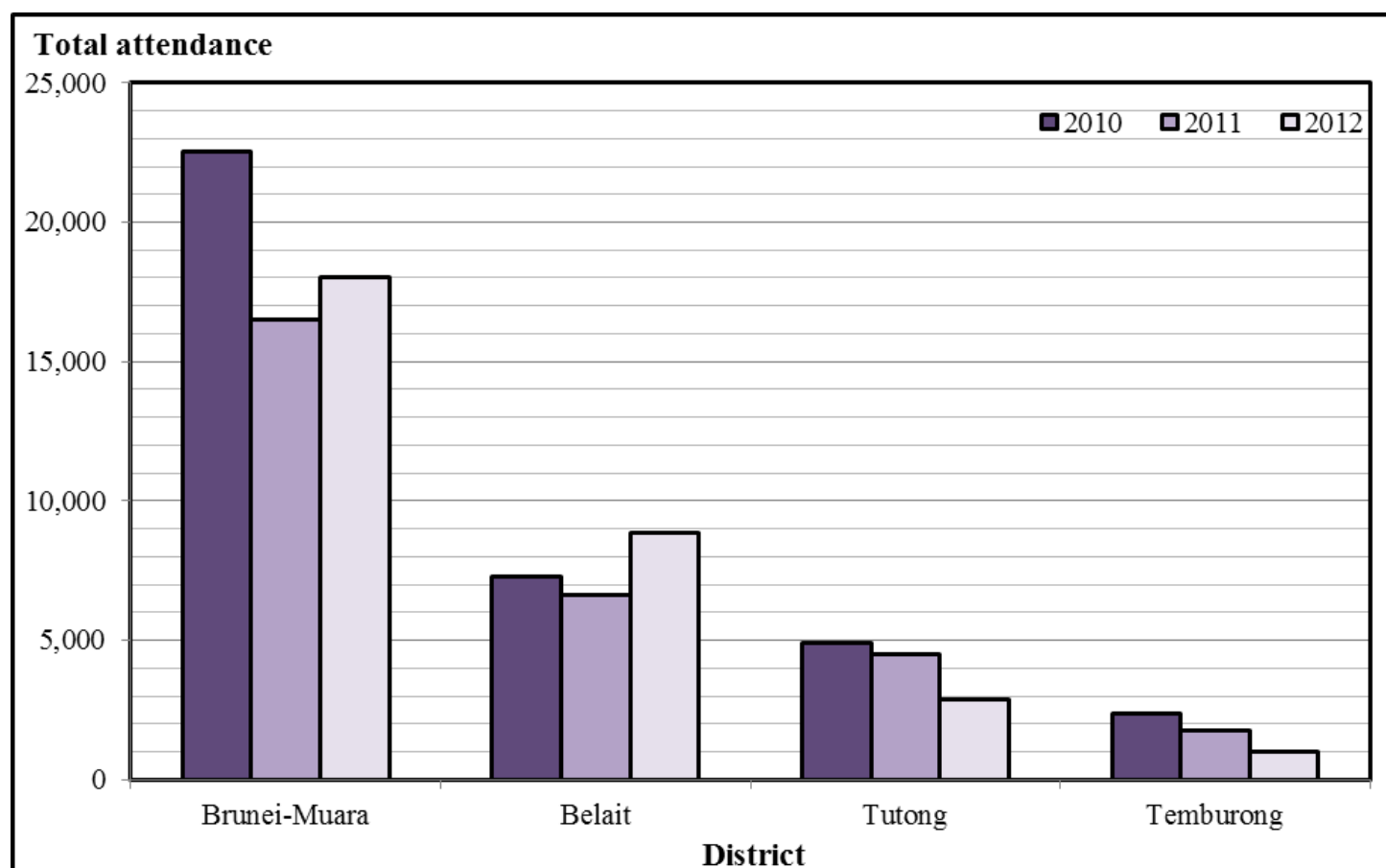
**Table 3.3** Total attendances (outpatients and appointments) by districts for each age group (2012)

District	Age group						All combined		
	0-5		6-12		13-19				
	OP	APPT	OP	APPT	OP	APPT	OP	APPT	TOTAL
Brunei-Muara	624	756	8,722	7,865	1	29	9,347	8,659	18,006
Belait	336	283	4,814	3,406	0	0	5,150	3,689	8,839
Tutong	174	135	1,402	1,137	2	0	1,578	1,272	2,850
Temburong	82	2	896	7	25	0	1,003	9	1,012
<b>All combined</b>	<b>1,216</b>	<b>1,176</b>	<b>15,834</b>	<b>12,415</b>	<b>28</b>	<b>29</b>	<b>17,078</b>	<b>13,629</b>	<b>30,707</b>

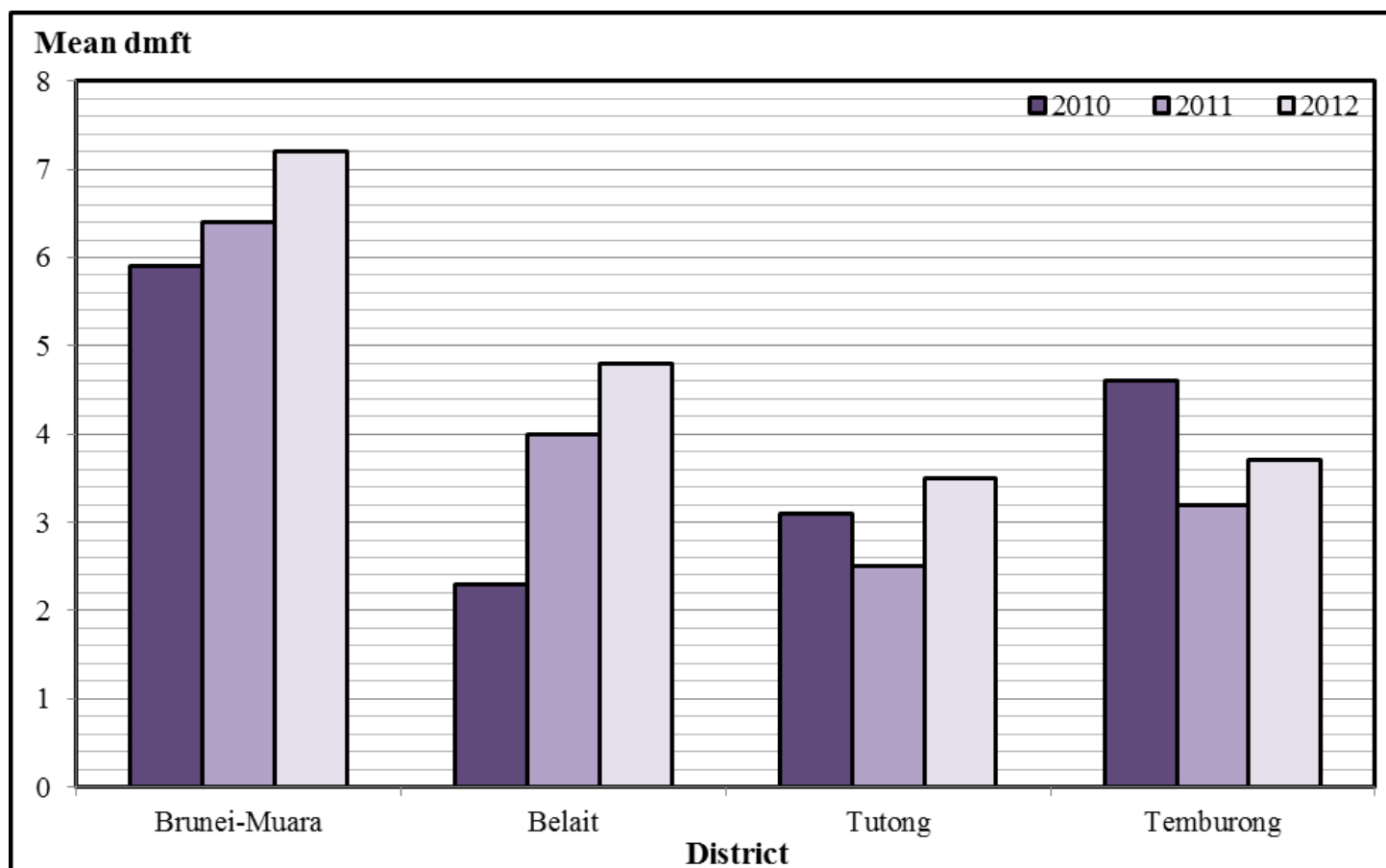
Note: All treatments in Schools are done by Dental Nurses/Therapists



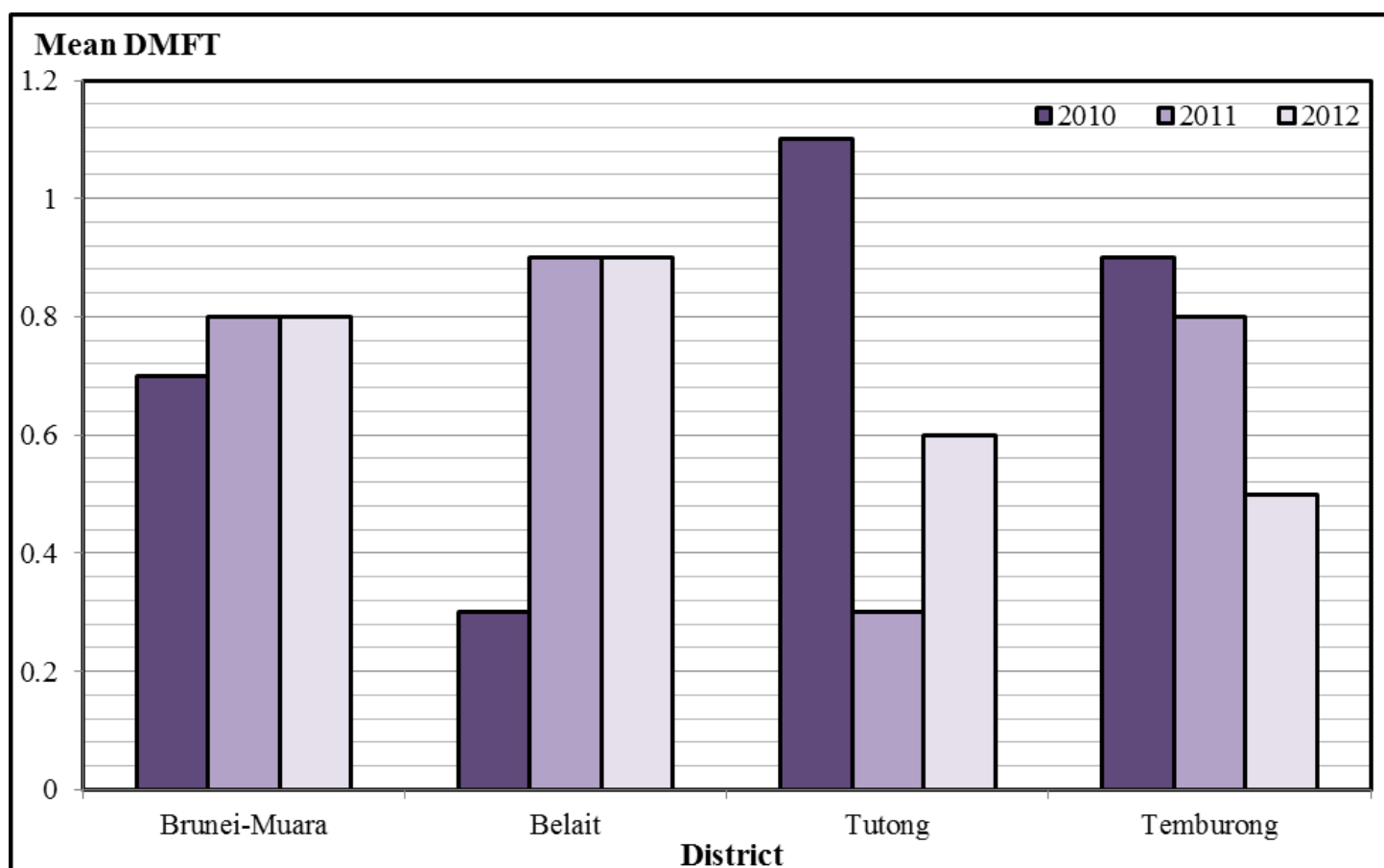
**Figure 3.2** Percentage coverage= Number of new patients /school population (2010-2012)



**Figure 3.3** Total attendances by district (2010-2012)



**Figure 3.4a** Deciduous dentition dental caries experience for 5-year-old school children (2010-2012)



**Figure 3.4b** Permanent dentition dental caries experience for 12-year-old school children (2010-2012)



# PRODUCTIVITY – PRIMARY ORAL CARE

Primary Oral Care services provide basic curative, corrective and rehabilitative services to render the patient orally fit, control all active diseases and restore acceptable oral function. It is the first line of oral health care, delivering dental education and basic treatment to achieve better oral health.

Services provided include:

- The emergency relief of pain and discomfort and the control of infection of oro-facial origin
- Routine dental check-up
- Dental extractions under local anaesthetic
- Dental scaling and prophylaxis
- Dental fillings
- Simple root canal treatment
- Plastic dentures (Full and partial dentures)
- Chairside Oral Health Education
- Assess complex cases for specialist referrals

## **Overview of Primary Oral Care Services**

### Manpower

3 (2 local and 1 expatriate) Senior Dental Officers

36 (18 local and 18 expatriate) Dental Officers

**Table 4.1a** Number of conservative and prosthetic procedures done in the Primary Oral Care Division (2012)

Age group	Primary care attendance	CONSERVATIVE						PROSTHETIC										
		Amalgam		Tooth-coloured		Dressing		Recontour -ing of restoration (patient)	Procedure (patient)	Full Denture	Partial Denture	Immediate	Interim	Metal-based partial denture (no of units)	Repairs	Relines	Rebase	Addition
		No. of teeth	surfaces	No. of teeth	surfaces	No. of teeth	surfaces											
Brunei-Muara																		
0-5	85	3	4	19	28	1	2	0	0	0	0	0	0	0	0	0	0	0
6-12	214	1	2	31	61	24	29	0	8	2	0	0	0	0	0	0	0	0
13-19	3,192	516	719	1,054	1,518	285	368	1	13	0	4	0	0	0	2	1	0	0
20-55	28,475	3,215	5,131	9,682	14,674	2,270	183	47	941	111	406	26	9	17	140	12	3	294
>55	4,359	260	457	1,361	2,010	140	183	17	943	257	274	7	9	1	213	5	1	9
Belait																		
0-5	93	0	0	2	2	0	0	7	0	0	0	0	0	0	0	0	0	0
6-12	212	0	0	6	7	9	9	1	0	0	0	0	0	0	0	0	0	0
13-19	989	76	118	314	443	149	176	2	6	0	3	1	0	0	1	0	0	0
20-55	8,042	421	707	2,327	3,510	1,226	1,501	9	406	28	86	15	0	0	90	8	0	27
>55	1,955	36	61	648	954	100	125	1	409	75	72	5	0	2	130	8	30	0
Tutong																		
0-5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-12	18	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0
13-19	848	146	167	221	250	41	41	0	0	0	1	0	0	0	0	0	0	0
20-55	5,340	624	810	1,288	1,531	320	325	0	182	15	52	1	2	4	16	4	0	0
>55	1,594	78	93	256	292	23	23	0	242	61	53	1	17	0	32	5	0	4
Temburong																		
0-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-19	175	48	79	61	117	27	34	0	1	0	0	0	0	0	0	0	0	0
20-55	1,485	215	335	520	796	204	279	4	25	2	5	1	0	0	0	0	0	0
>55	346	16	30	101	127	10	13	0	48	5	7	0	0	0	6	1	0	0
All combined	57,424	5,655	8,713	17,895	26,325	4,829	3,291	89	3,224	556	963	57	37	24	630	44	34	334

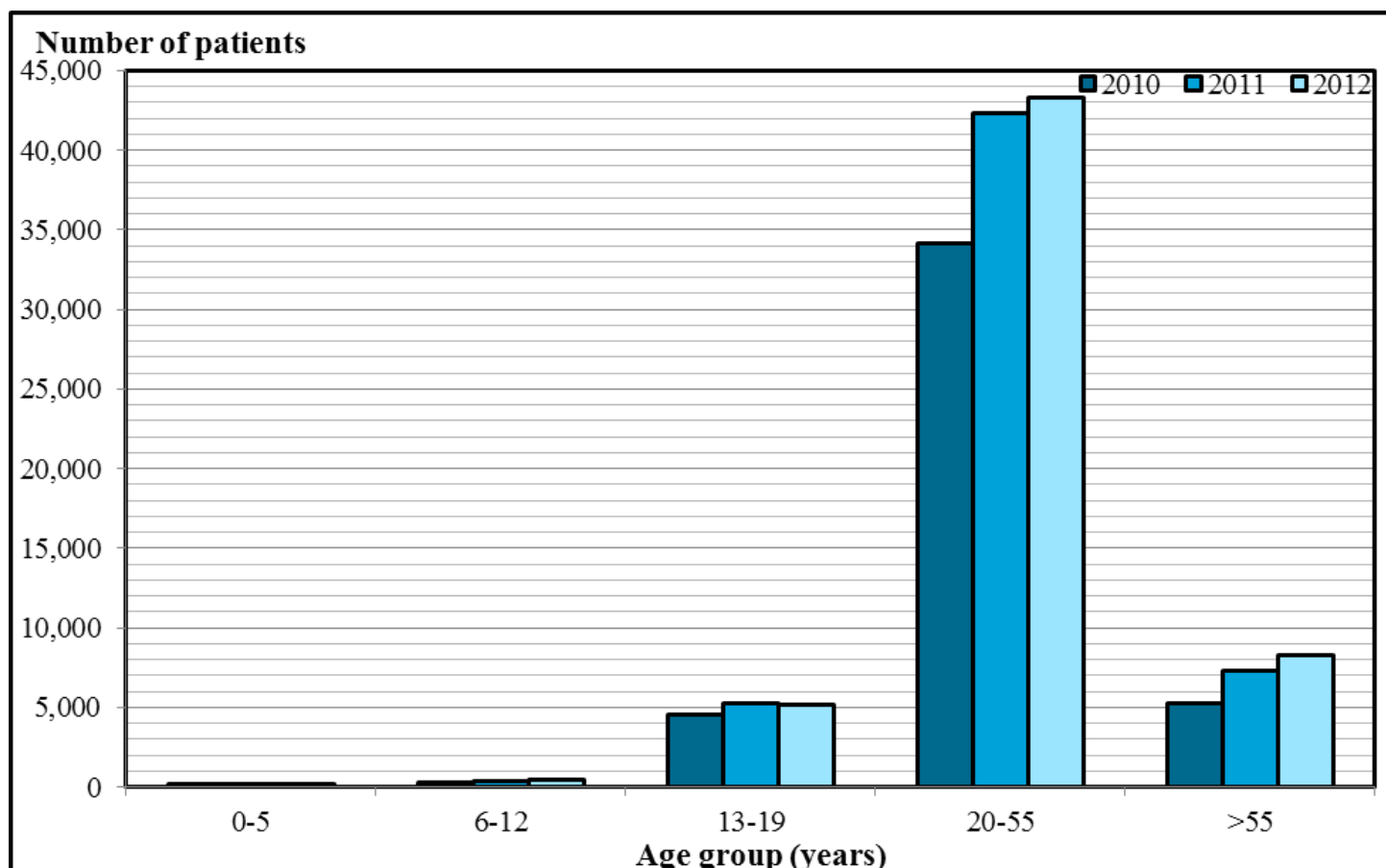
**Table 4.1b** Number of oral surgical procedures done in the Primary Oral Care Division (2012)

Age group	ORAL SURGERY														ORAL MEDICINE (PT)		
	Infection/ Abscess (Pt)	Others (Pt)	Trauma				LA/TA/SEDATION										
							Minor Oral Surgery										
			No of Teeth	Hard Tissue (Pt)	Soft Tissue (Pt)	Splinting	Patients	No of teeth extracted						Soft Tissue Lesion (Pt)	Hard Tissue Lesion (Pt)	Other Oral Lesion	Medical Condition
								Non-surgical				Surgical (permanent)					
								D		P		3 <sup>rd</sup> Molar	Other Teeth				
p	n	p						n									
Brunei-Muara																	
0-5	74	4	0	0	0	0	9	4	1	2	0	0	0	0	14	0	
6-12	131	38	0	0	0	0	0	16	1	52	0	0	1	0	16	4	
13-19	146	78	1	1	0	0	755	17	4	631	97	1	0	0	82	5	
20-55	1,317	384	6	9	15	0	9,427	26	3	9,790	157	12	25	0	720	372	
>55	114	80	58	1	2	1	2,036	0	0	2,050	43	0	3	0	1,541	4	
Belait																	
0-5	50	3	0	0	0	0	9	3	2	0	0	0	0	0	0	15	
6-12	74	5	0	0	0	0	9	7	0	0	5	0	0	0	4	32	
13-19	93	6	0	0	0	0	110	2	0	129	9	0	0	0	0	52	
20-55	655	19	0	0	0	1	1,405	3	0	1,675	9	8	12	0	17	422	
>55	149	8	0	0	1	0	564	0	0	630	0	0	7	0	3	58	
Tutong																	
0-5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6-12	5	0	0	0	0	0	6	0	0	5	1	0	0	0	0	0	
13-19	28	0	0	0	0	0	128	3	0	195	5	0	0	0	0	0	
20-55	185	2	0	0	0	0	1,486	2	0	1,688	21	1	0	0	0	0	
>55	46	0	0	0	0	0	577	0	0	776	0	0	0	0	0	0	
Temburong																	
0-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13-19	0	55	0	0	0	0	14	0	0	14	0	0	0	0	0	0	
20-55	0	402	0	0	0	0	327	0	0	345	0	4	12	0	0	0	
>55	0	106	0	0	0	0	145	0	0	158	0	0	0	0	0	0	
All combined	3,068	1,190	65	11	18	2	17,007	83	11	18,140	347	26	60	0	0	2,397	964

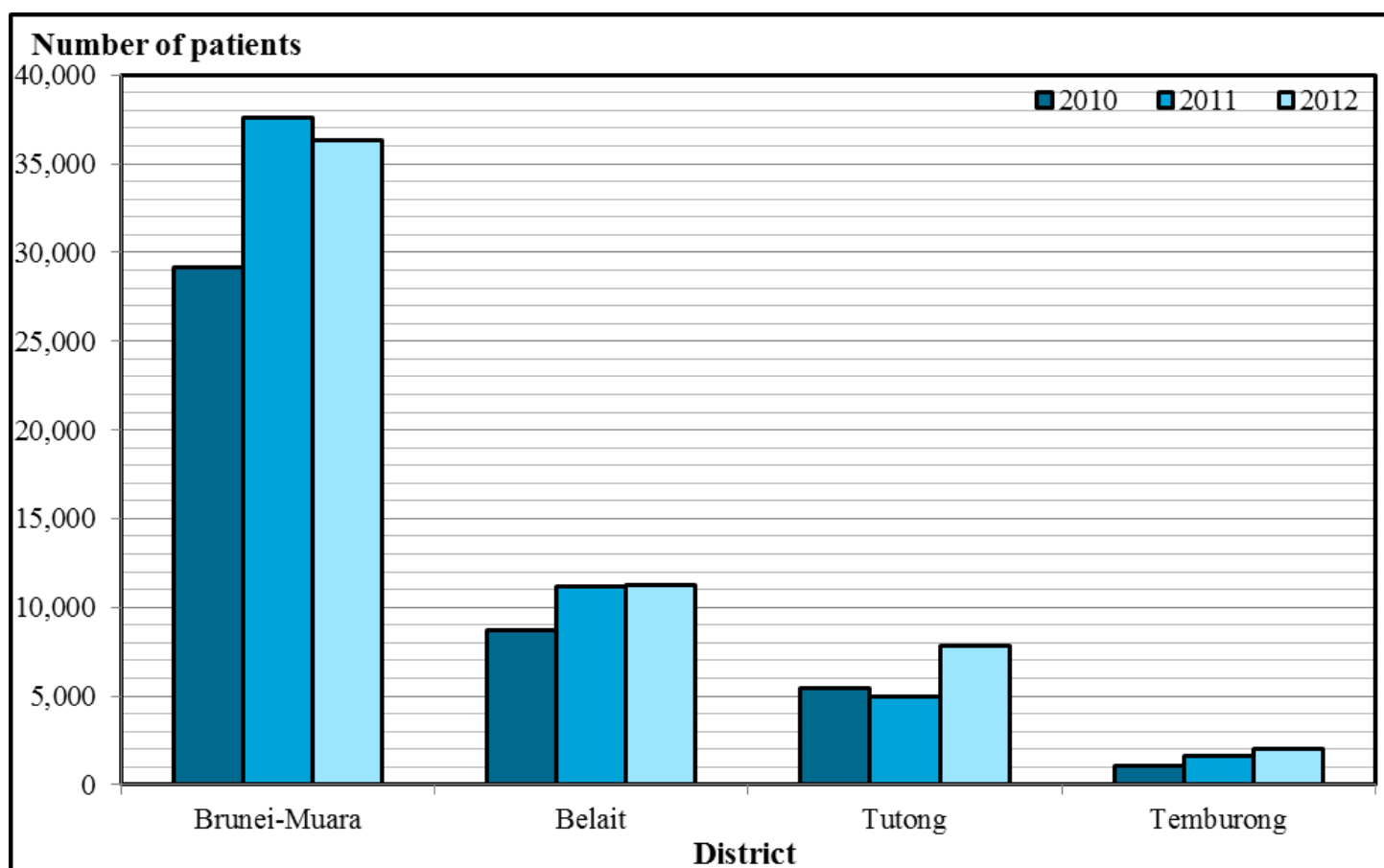
D - Deciduous teeth, P - Permanent teeth, p - pathological, n - non-pathological

**Table 4.1c** Number of Periodontics and Preventive procedures done in the Primary Oral Care Division (2012)

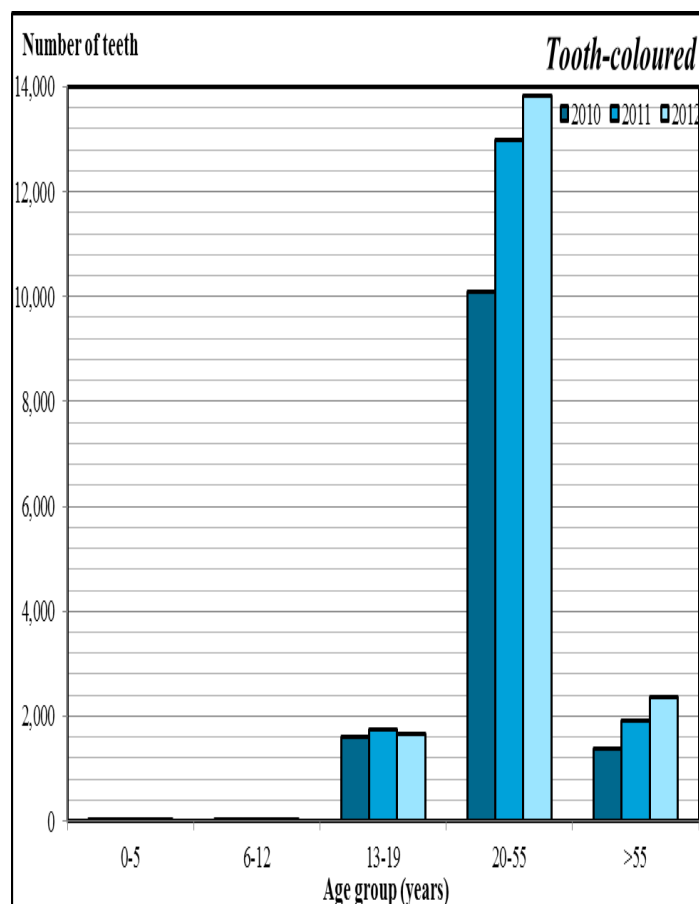
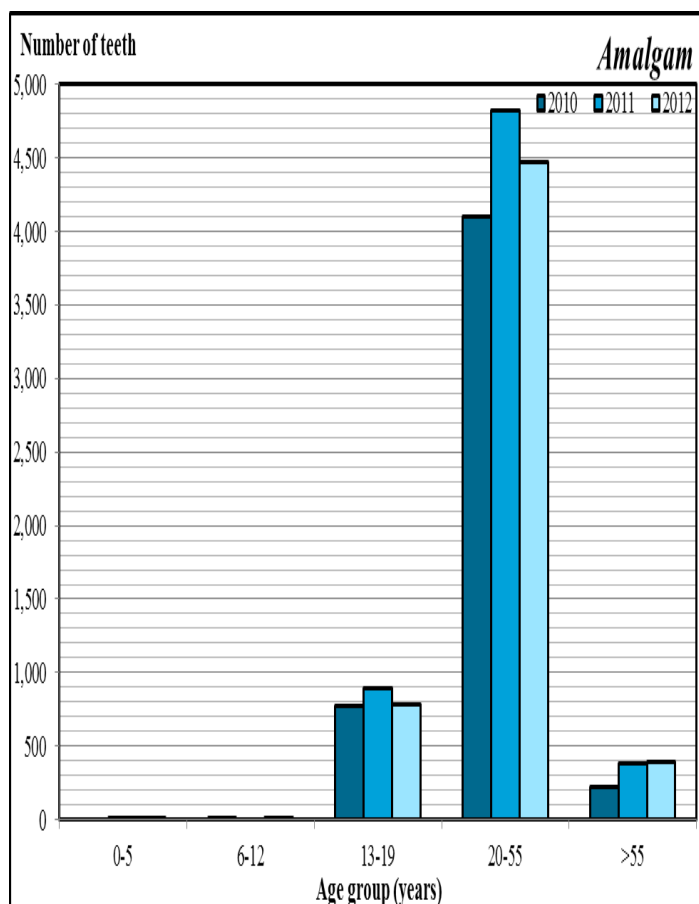
Age group	PERIODONTICS (NON-SURGICAL)											PREVENTIVE			REFERRAL OF PATIENTS TO:		PATIENT COMPLETION
	OHI/ demonstration	Diet analysis	Review	Scaling & prophylaxis	Root planning (quadrant)	Post RP charting	Removal sutures	Fluoride desensitization	Pocket charting	Infection/ Abscess	Others/Misc.	individual					
												Fissure sealant		Fluoride (prevention) Patient			
												Patient	Surfaces		Dental	Medical	
Brunei-Muara																	
0-5	3	0	0	2	0	0	0	0	0	0	4	0	0	0	29	1	3
6-12	5	0	2	4	1	0	0	0	0	0	8	0	0	0	118	2	7
13-19	949	4	11	1,031	29	0	0	4	1	7	31	2	0	7	205	4	524
20-55	6,386	13	80	7,320	20	1	21	35	171	145	166	43	35	117	1,188	56	2,765
>55	442	0	9	564	5	0	2	1	8	12	13	5	1	22	116	25	197
Belait																	
0-5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	19	8	1
6-12	21	0	3	5	0	0	0	0	0	0	2	0	0	0	27	7	8
13-19	268	32	67	189	102	9	0	2	4	3	6	0	0	0	44	16	168
20-55	2,464	0	398	2,560	0	0	17	72	0	28	17	2	3	3	203	107	1,324
>55	436	0	58	360	0	0	6	12	0	5	2	0	0	1	47	28	201
Tutong																	
0-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
6-12	0	0	0	0	0	0	0	0	0	0	0	2	8	2	0	1	0
13-19	123	0	16	238	0	0	1	12	0	1	2	0	0	0	19	0	56
20-55	634	1	11	1,131	10	0	4	66	0	2	12	6	37	0	49	14	261
>55	25	2	11	20	0	0	0	19	0	0	4	0	0	0	1	5	19
Temburong																	
0-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-19	13	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	15
20-55	146	0	0	146	0	0	0	0	0	0	0	1	1	0	0	0	127
>55	10	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	8
All combined	11,933	52	666	13,593	167	10	51	223	184	203	267	61	85	152	2,065	277	5,684



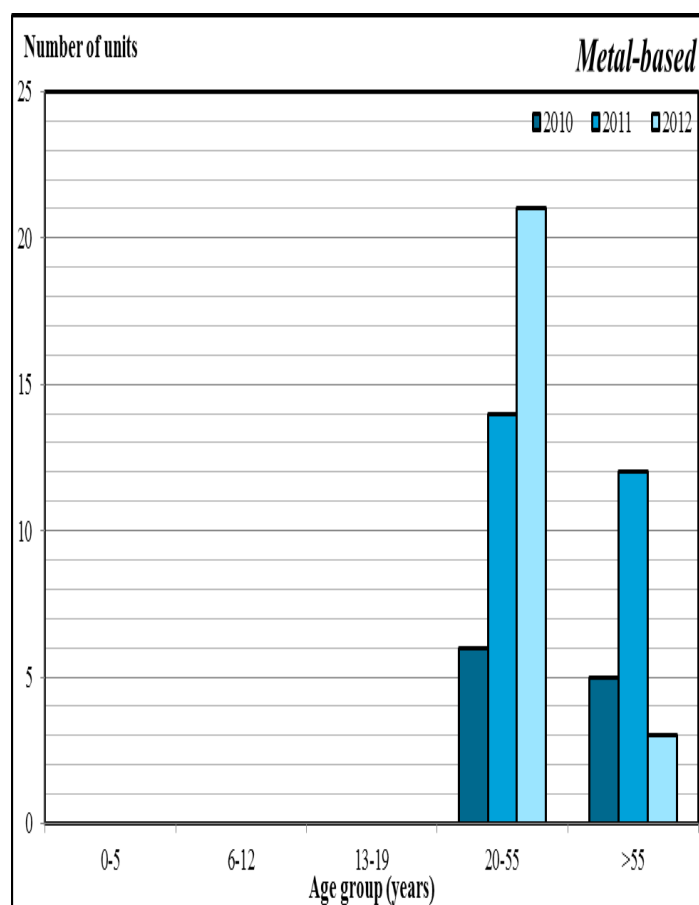
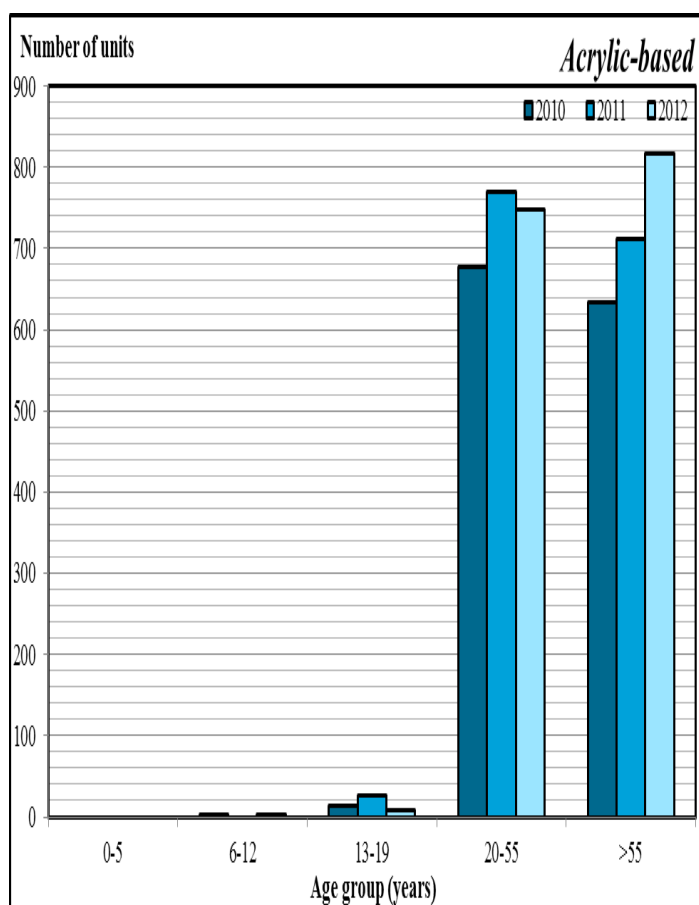
**Figure 4.1a** Number of patients treated by age group (2010-2012)



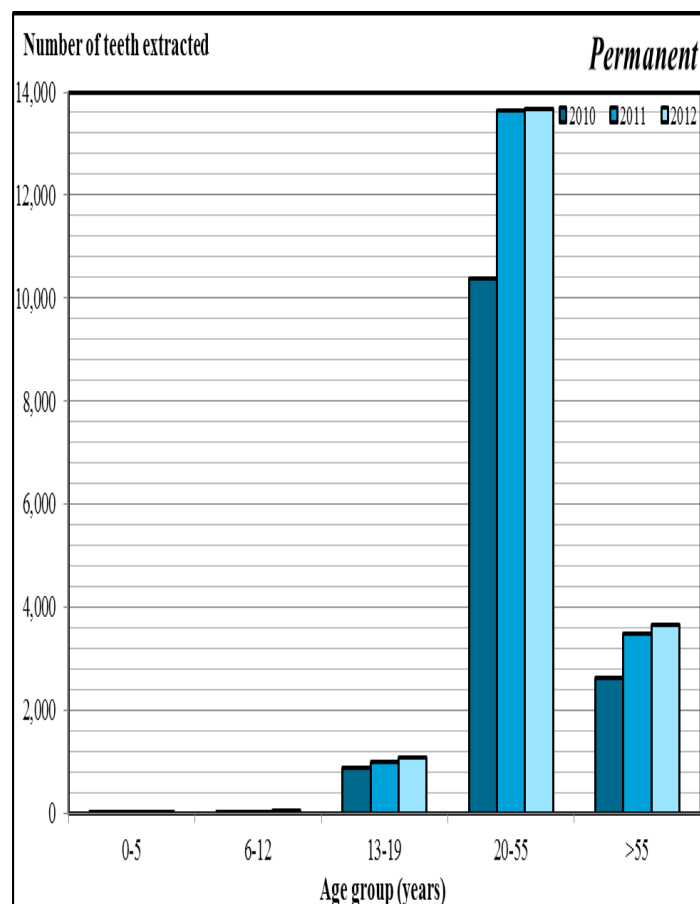
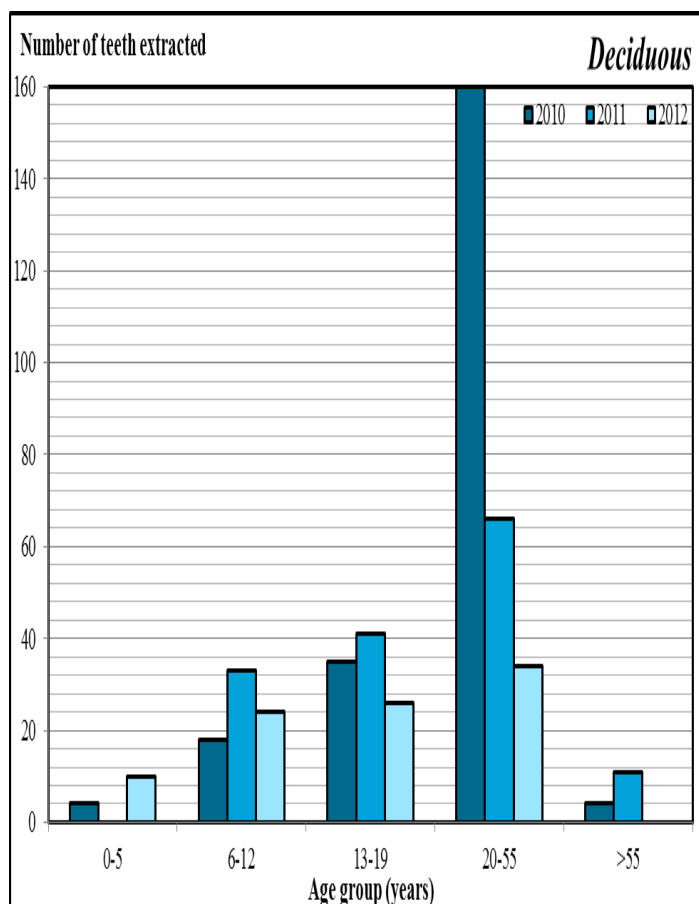
**Figure 4.1b** Number of patients treated by district (2010-2012)



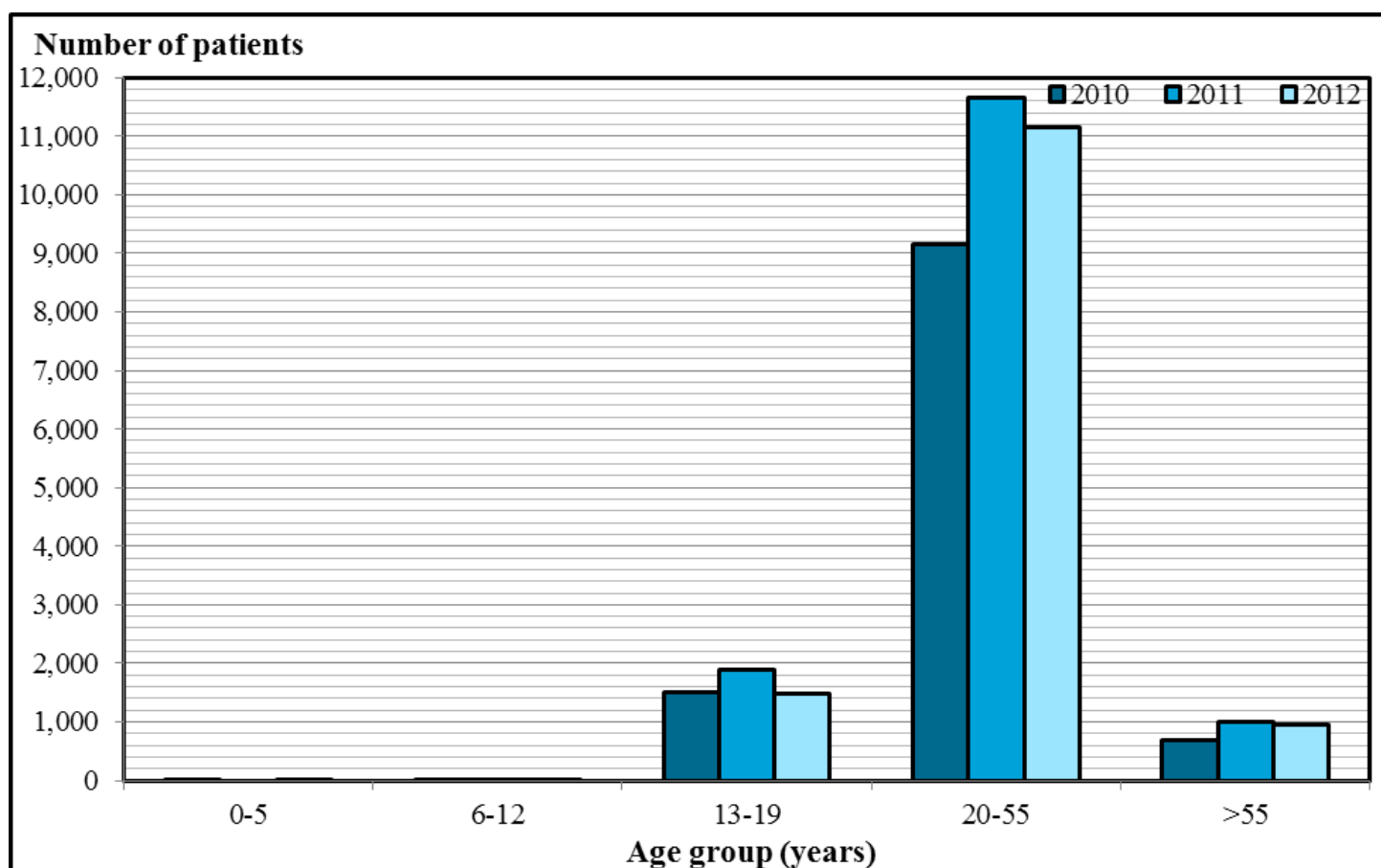
**Figure 4.1c** Number of teeth restored with Amalgam and tooth-coloured restorations by age group (2010-2012)



**Figure 4.1d** Number of acrylic and metal based dentures issued by age group (2010-2012)



**Figure 4.1e** Number of non-surgical teeth extraction by age group (2010-2012)



**Figure 4.1f** Number of scaling by age group (2010-2012)



# PRODUCTIVITY – ENDODONTICS

The aim of endodontic treatment is to preserve functional teeth without prejudice to the patient's health. The Endodontic Unit deals with treatment involving the roots of teeth.

Services provided include, but is not limited to:

- The differential diagnosis and treatment of oro-facial pain of pulpal and periradicular origin
- Prevention of pulp disease and vital pulp therapy
- Pulp extirpation and root canal treatment
- Root canal treatment in cases of apical periodontitis
- Root canal retreatment in case of post-treatment apical periodontitis
- Surgical endodontics
- Bleaching of endodontically treated teeth
- Treatment procedures related to coronal restoration by means of a core and/or post involving the root canal space

## **Overview of Endodontic Specialty Services**

### Manpower

2 (1 local and 1 expatriate) Specialist

1 (expatriate) Senior Dental Officer

The Endodontic Unit is based at the National Dental Centre, Brunei-Muara and accepts referrals from government and private dental clinics throughout Brunei Darussalam.

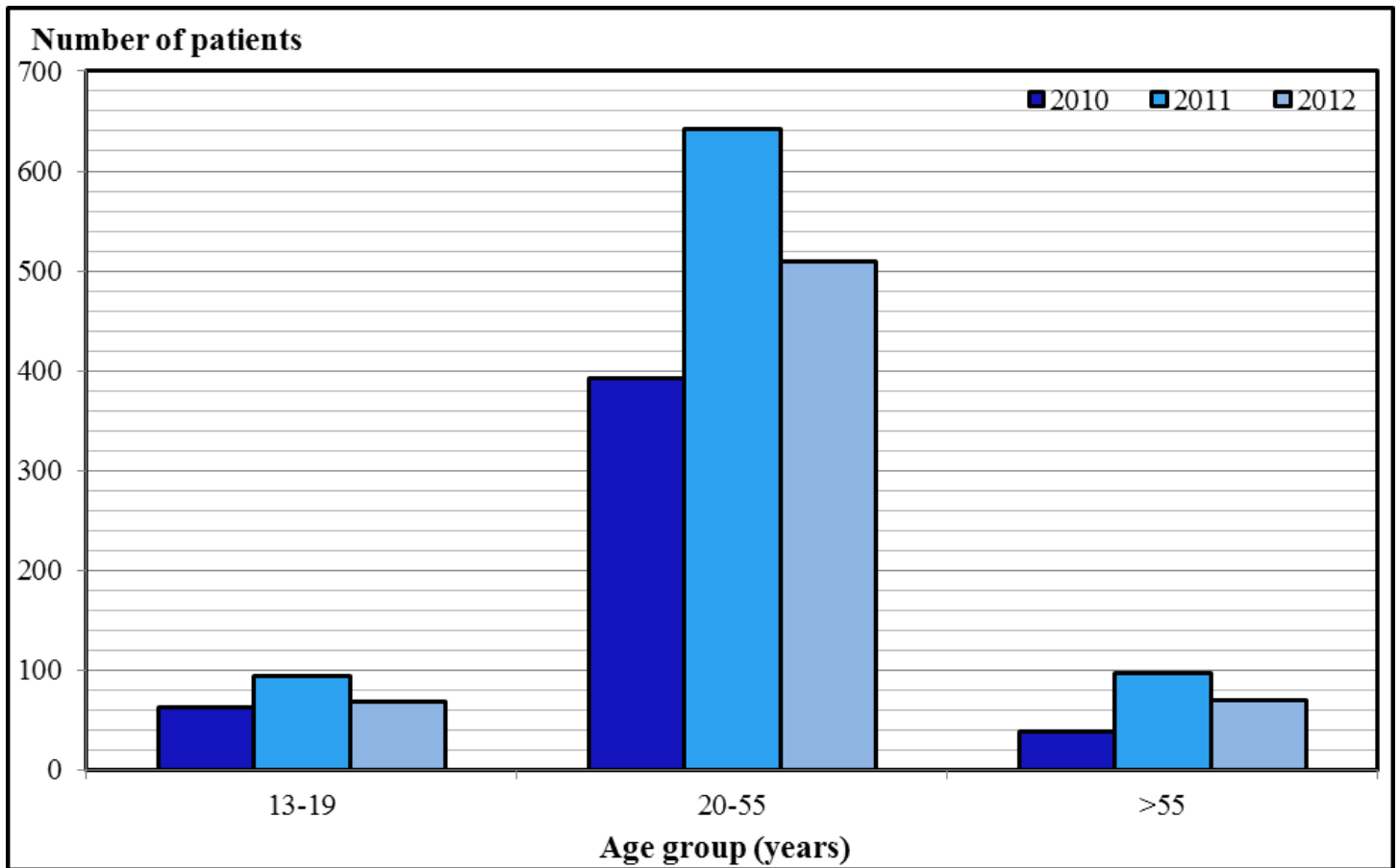
**Table 4.2.1a** Number of patients and treatment done in the Endodontic Unit (2012)

Age group	ENDODONTICS (includes pulpotomy)			FIXED PROSTHODONTICS											
	Procedures (Patient)	Teeth		Procedures (Patient)	Recementation of crowns/bridge (units)	Temporary crowns/ Bridge (units)	Posts (units)	Crown						Bridge	
		New	Repeat					Anterior		Posterior		Total Units Issued		Bridge	Units
								FPC	PBC	PBC	FPC	New	Repeat		
13-19	68	16	54	5	0	2	1	0	0	2	1	1	1	0	0
20-55	509	181	352	120	24	64	50	6	10	34	2	35	14	8	22
>55	70	48	30	44	12	40	11	1	3	15	0	13	4	3	13
All combined	647	245	436	169	36	106	62	7	13	51	3	49	19	11	35

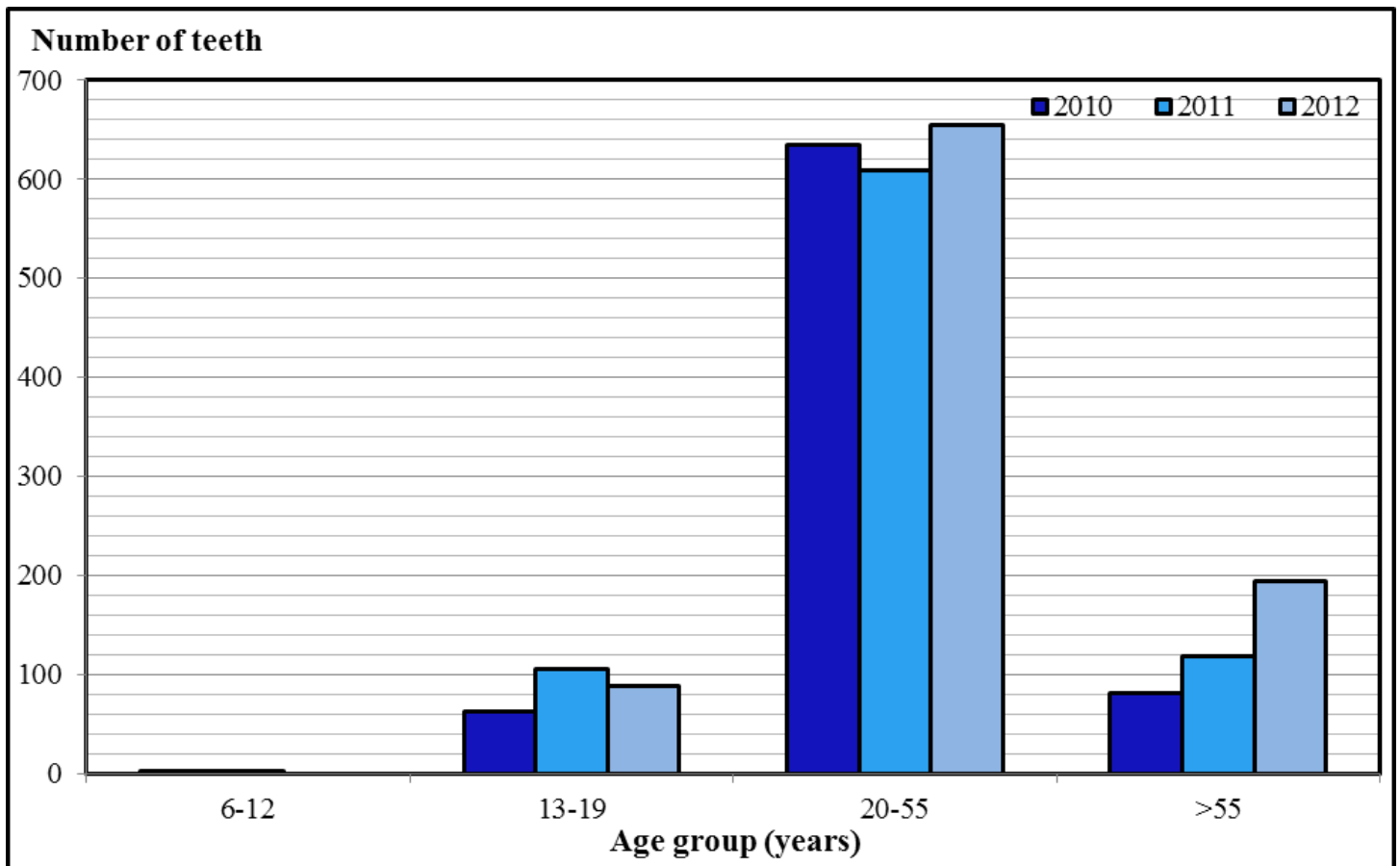
FPC – Full Porcelain Crown, PBC – Porcelain Bonded Crown

**Table 4.2.1b** Number of patients and treatment done in the Endodontic Unit (2012)

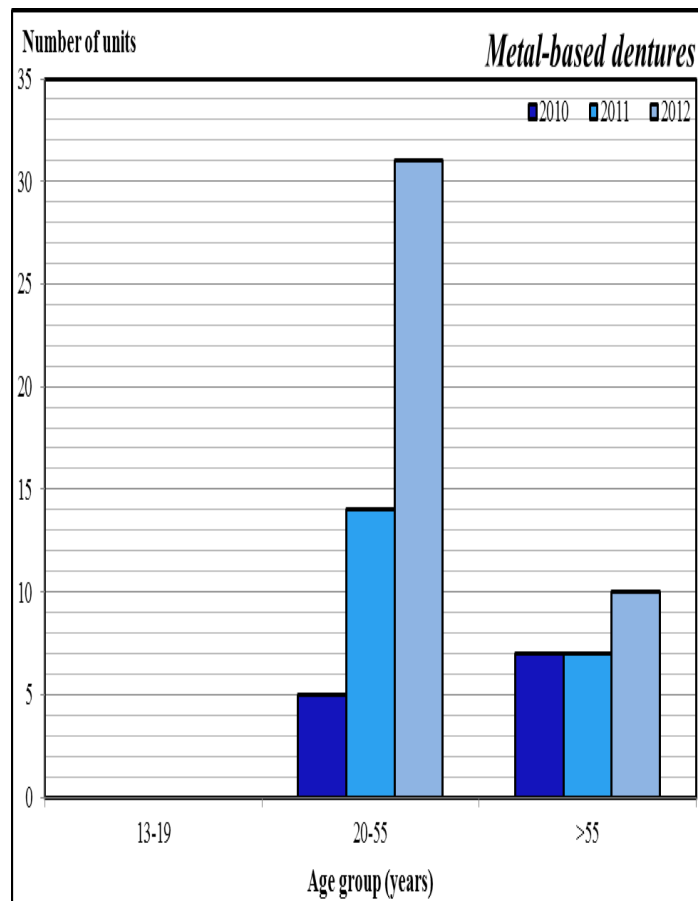
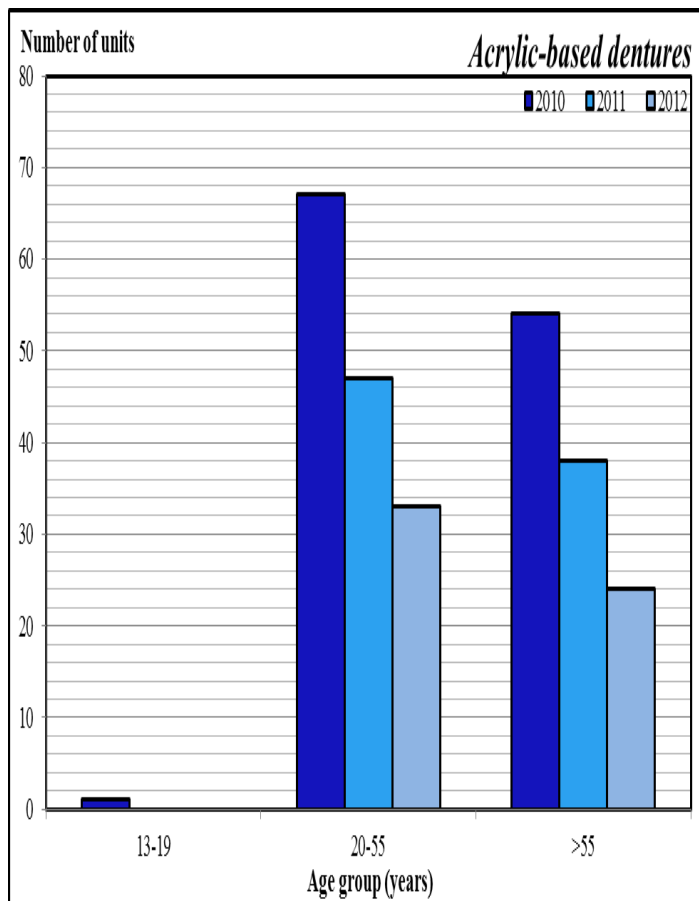
Age group	PROSTHETIC							CONSERVATIVE		ORAL SURGERY	PERIODONTICS
	Acrylic-based (number of units issued)			Metal-based	Repairs	Relines		Total number of Teeth & Surfaces Permanently Filled		No. of Teeth Extracted (Surgical)	No. of Scaling & Prophylaxis (Non-Surgical)
	Full denture	Partial denture	Immediate			1 <sup>st</sup> treatment	Retreatment	Teeth	Surfaces New      Repeat		
0-5	0	0	0	0	0	0	0	4	4      0	0	0
6-12	0	0	0	0	0	0	0	0	0      0	1	0
13-19	0	0	0	0	0	0	0	89	35      161	0	83
20-55	4	28	1	31	3	9	0	654	285      903	9	548
>55	5	19	0	10	9	4	6	194	121      131	6	96
<b>All combined</b>	<b>9</b>	<b>47</b>	<b>1</b>	<b>41</b>	<b>12</b>	<b>13</b>	<b>6</b>	<b>941</b>	<b>445      1,195</b>	<b>16</b>	<b>727</b>



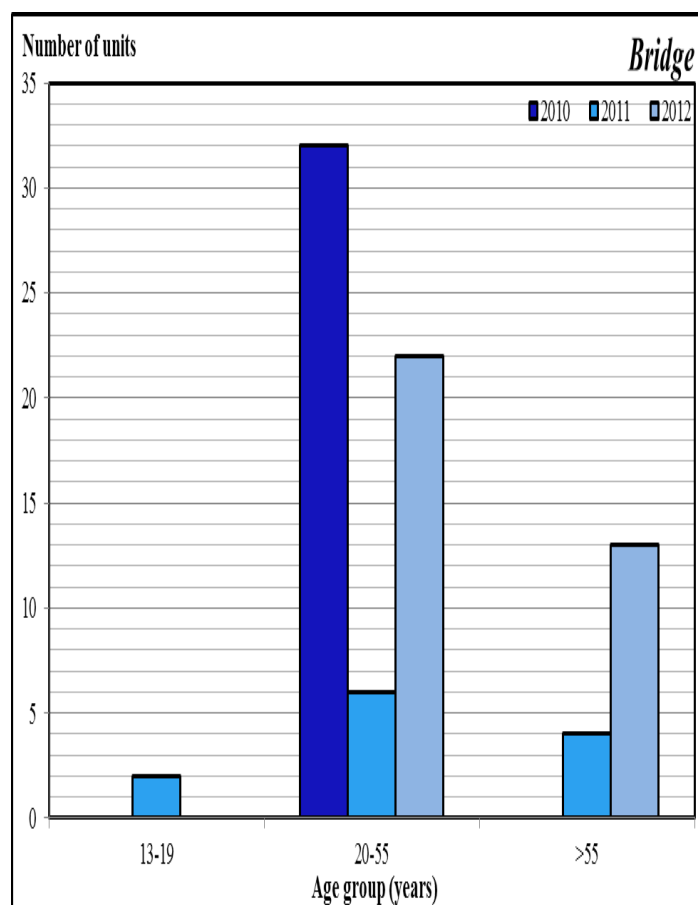
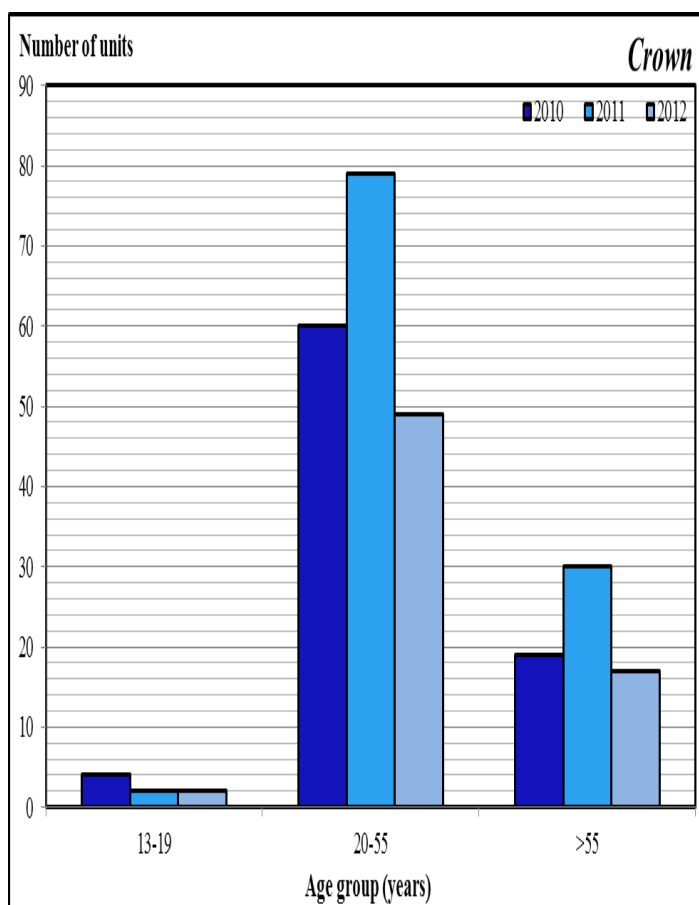
**Figure 4.2.1a** Number of attendances for endodontic treatment by age group (2010-2012)



**Figure 4.2.1b** Number of teeth permanently filled by age group (2010-2012)



**Figure 4.2.1c** Number of acrylic- and metal-based dentures issued by age group (2010-2012)



**Figure 4.2.1d** Number of crowns and bridges issued by age group (2010-2012)

# PRODUCTIVITY – ORAL SURGERY

Oral surgery is a branch of medicine, dealing with diagnostics and the surgical treatment of oral diseases.

## ORGANISATION

The Specialist Dental Clinic (SDC) was established on 1<sup>st</sup> December 2000. It is housed on the 3<sup>rd</sup> floor of the Specialist Block at RIPAS Hospital. It is equipped with 6 dental chairs and operates as a specialist referral clinic. It accepts referrals from dental and medical practitioners from the public sector, private sector and armed services from throughout Brunei Darussalam and in-patients from within the hospital.

Since its inception, the department has attained a reputation as the leading tertiary referral centre for hospital dentistry in Brunei. This has been further reinforced by the recognition accorded to it by the Royal College of Surgeons of England as a recognised centre for Membership of the Faculty of Dental Surgery (MFDS) training in May 2004. This has been made possible through the efforts and commitment of the pioneer staff towards providing a quality service and a high standard of hospital dentistry.

## SERVICES

### Services provided include:

- Specialist services in the disciplines of oral surgery, periodontology, oral medicine, and implantology
- Dental management of the medically compromised including children
- Dental management of in-patients
- Hospital Dentistry requiring general anaesthetic and sedation facilities
- Support services for the Oral & Maxillo-facial and Plastic Surgical Unit in the areas of maxillo-facial trauma, cleft lip and palate management and orthognathic surgery
- Support services for the Brunei Cancer Centre for patients undergoing radiotherapy and chemotherapy
- Support services for patients undergoing open heart surgery
- Emergency dental services for hospital personnel

**Oral Surgery Procedures performed include:**

- Surgical extractions
- Wisdom teeth removal
- Management of complications due to tooth extractions including OAF closure
- Management of dento-alveolar trauma injuries
- Surgical exposure of unerupted teeth
- Removal of retained roots
- Bone grafting implant sites
- Management of cystic lesions
- Management of acute facial infections
- Biopsy of soft tissue lesions
- Pre-prosthetic surgery e.g. frenectomy, alvelectomy & alveoplasty

**Achievements**

Since 2001, Day Care Surgery has been introduced for all minor oral surgical procedures. This has made it more convenient for patients, lowered inpatient hospital costs and also freed hospital beds.

**MANPOWER**

<b>Staffing:</b>	<b>2000</b>	<b>2011</b>	<b>2012</b>
Specialist	1	1	4* (1 LDP / 1 NPL)
Senior Dental Officer	1	3	0
Dental Officer	0	1	1
Hygienist	1	0	0
Senior Dental Assistant	1	3	3
Dental Assistant	3	4	4
Amah	1	2	2
Attendant	0	1	1
Clerical Assistant	0	1	1
Receptionist	0	1	1
Total	8	17	17

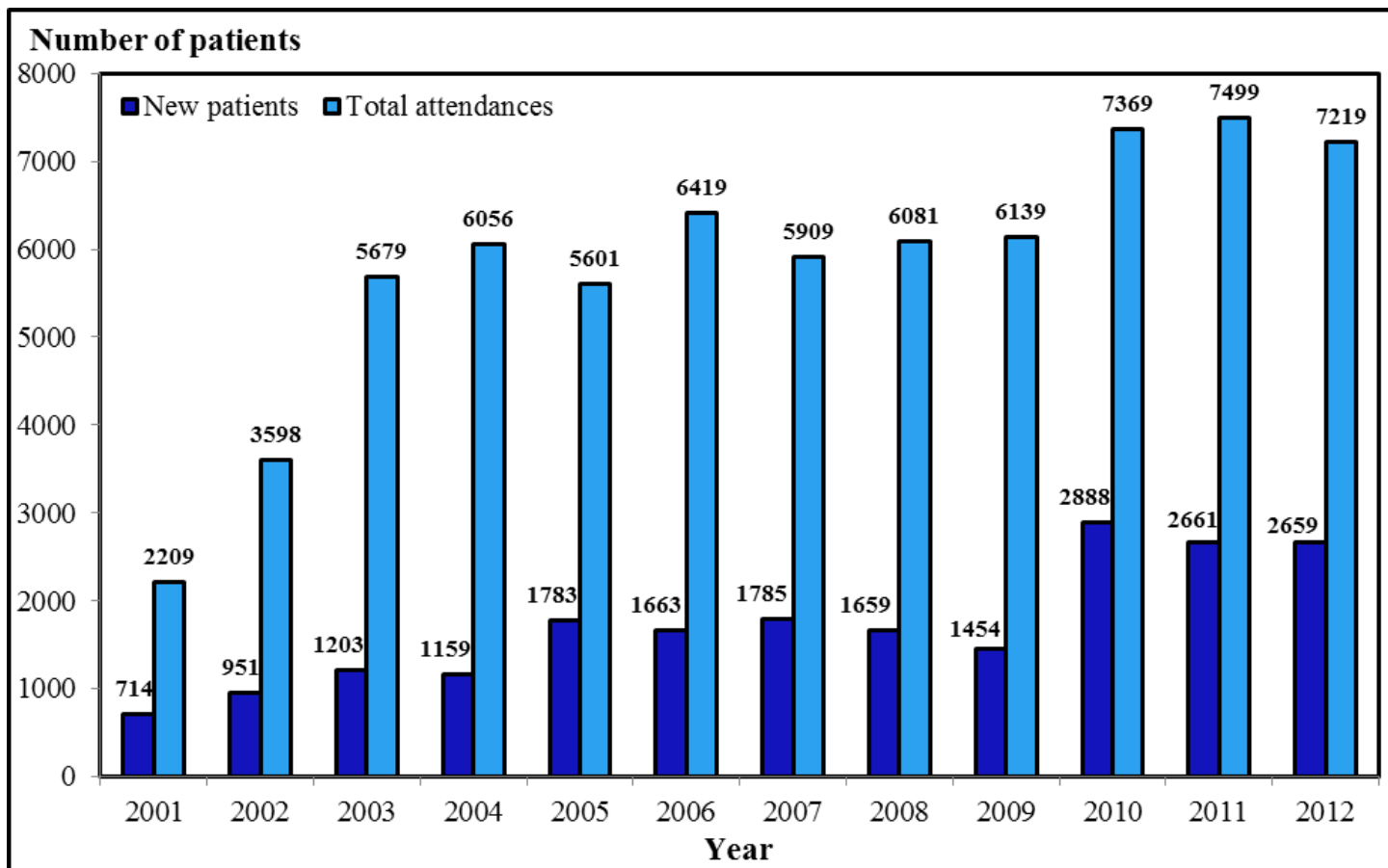
**Table 4.2.2a** Number of patients and types of treatment in the Oral Surgery Unit for the whole state (2012)

Month	Patient Attendance			ORAL SURGERY PROCEDURES															
				Soft Tissue						Hard Tissue									
	New Patients (1st Visit)	Review (Repeat Visit)	Total Attendances	Incision + Drainage	Excision Biopsy	Incision Biopsy	Soft tissue excision	Frenectomy	Gingivectomy	Enucleation + Apicectomy	Apicectomy	Alveolectomy	Alveoplasty	Exploration + Curettage	Bone excision	Enucleation	Marsupialisation	Surgical Exposure	Coronectomy
January	339	355	694	6	0	0	2	0	0	2	1	1	0	0	1	0	0	2	0
February	181	357	538	1	2	0	1	0	0	0	0	0	1	0	3	0	0	0	0
March	256	367	623	2	2	2	3	0	0	0	0	0	0	0	1	0	0	1	0
April	241	450	691	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0
May	217	463	678	0	0	2	2	0	0	0	0	0	0	3	0	1	0	0	0
June	164	372	536	1	3	0	1	1	0	0	0	0	0	0	0	1	0	1	0
July	281	306	777	2	1	2	1	0	0	0	0	0	0	3	0	0	0	0	0
August	142	299	441	1	3	1	1	0	0	0	0	0	0	0	1	1	0	0	0
September	233	396	629	0	1	1	0	0	0	2	3	0	0	1	0	0	0	0	0
October	226	465	691	0	5	0	4	0	0	0	0	0	0	1	0	0	0	1	0
November	232	312	544	1	0	0	2	0	0	0	1	0	0	1	1	1	0	0	2
December	147	236	377	1	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0
<b>All combined</b>	<b>2,659</b>	<b>4,378</b>	<b>7,219</b>	<b>15</b>	<b>17</b>	<b>8</b>	<b>18</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>10</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>2</b>

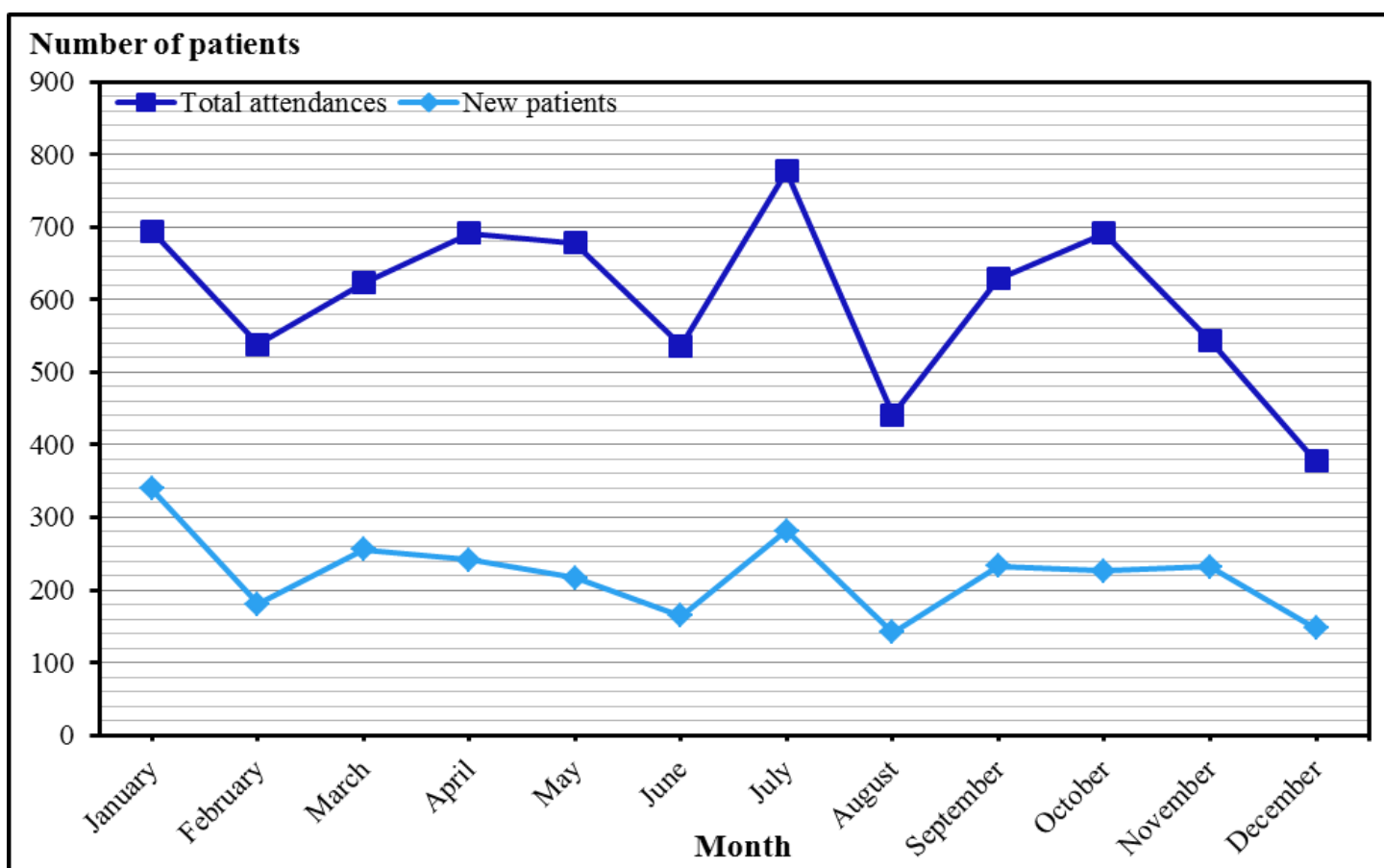


**Table 4.2.2b** Number of patients and types of treatment in the Oral Surgery Unit for the whole state (2012)

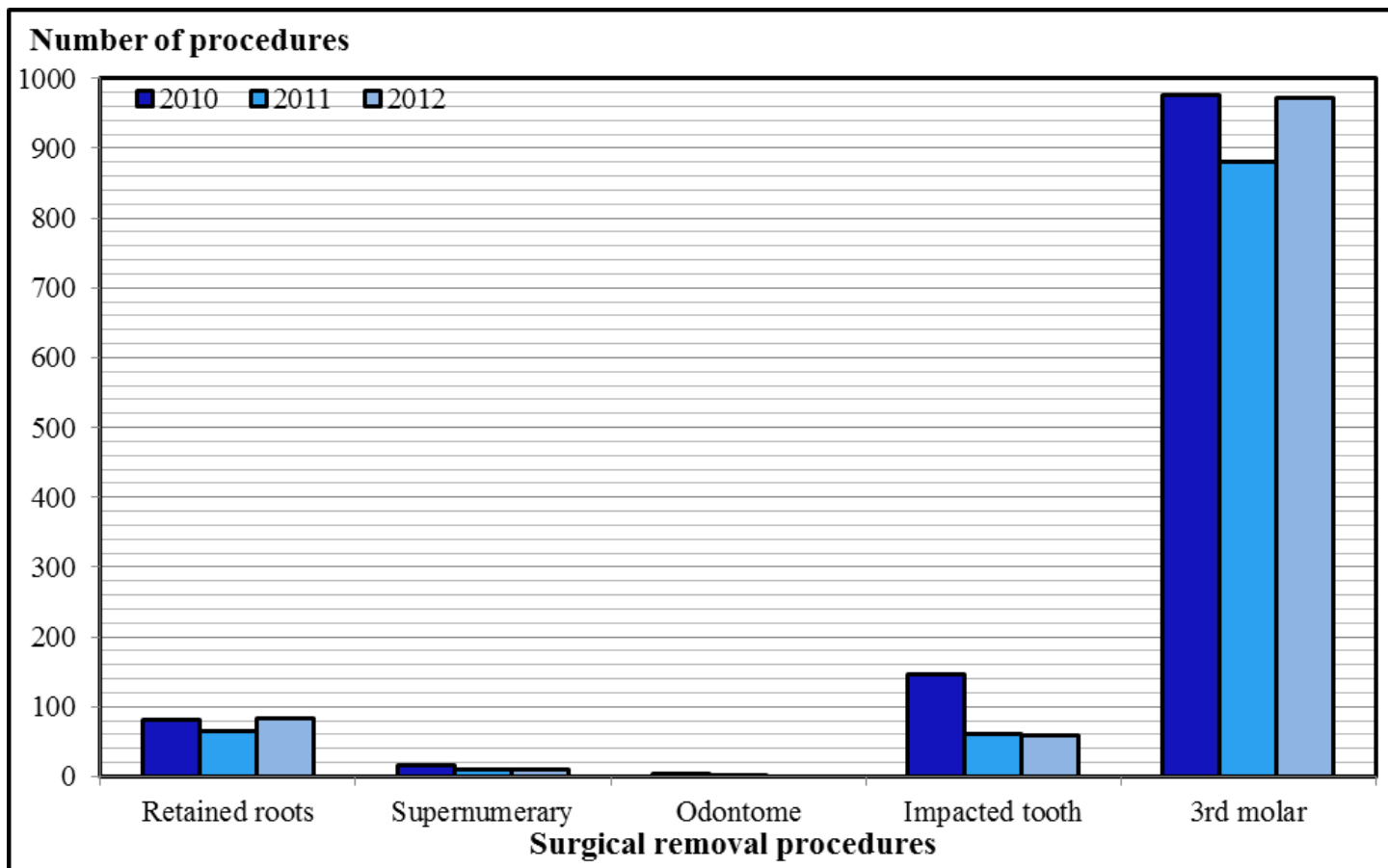
Month	ORAL SURGERY PROCEDURES																				
	Surgical Removal					Extraction		Dento-alveolar Trauma					Bleeding		Miscellaneous						Case Completion (Discharge)
	S/R retained roots	S/R Supernumerary	S/R Odontome	S/R Impacted tooth	S/R 3rd molar	Deciduous	Permanent	Composite splint	Arch Bar Splint	Eyelet splint	Pulpectomy	L / W closure	Bleeding socket arrest	Gingival bleed arrest	Scaling	Subgingival scaling	TMJ Disorder	SM Impression			
January	10	0	0	4	78	19	257	0	0	0	1	0	0	0	15	14	37	2	15	0	85
February	6	0	0	3	84	8	168	0	0	0	3	0	2	0	23	10	39	0	22	0	73
March	13	0	0	6	84	9	240	0	0	0	1	0	0	0	25	3	42	0	20	0	86
April	5	0	0	4	96	0	260	0	0	0	3	0	1	0	10	11	43	0	24	0	84
May	8	0	0	10	84	7	260	1	0	0	0	0	0	0	27	15	35	0	23	0	96
June	8	0	0	3	89	2	195	0	0	0	0	0	0	0	22	6	41	0	16	0	87
July	3	2	0	4	81	13	259	23	0	0	0	1	0	1	28	7	45	0	29	0	96
August	1	4	0	6	84	11	170	0	0	0	0	0	0	0	12	6	42	0	23	0	78
September	7	0	0	5	96	11	222	0	0	0	0	0	0	0	33	30	28	0	26	0	77
October	12	3	0	2	89	15	92	0	0	0	2	0	0	0	19	3	6	0	23	0	110
November	9	0	0	5	61	26	196	0	0	0	0	0	0	0	13	14	21	0	22	0	40
December	2	1	0	7	47	29	104	0	0	0	2	0	0	0	23	5	11	0	11	0	47
All combined	84	10	0	59	973	150	2,423	24	0	0	12	1	3	1	250	124	390	2	254	0	959



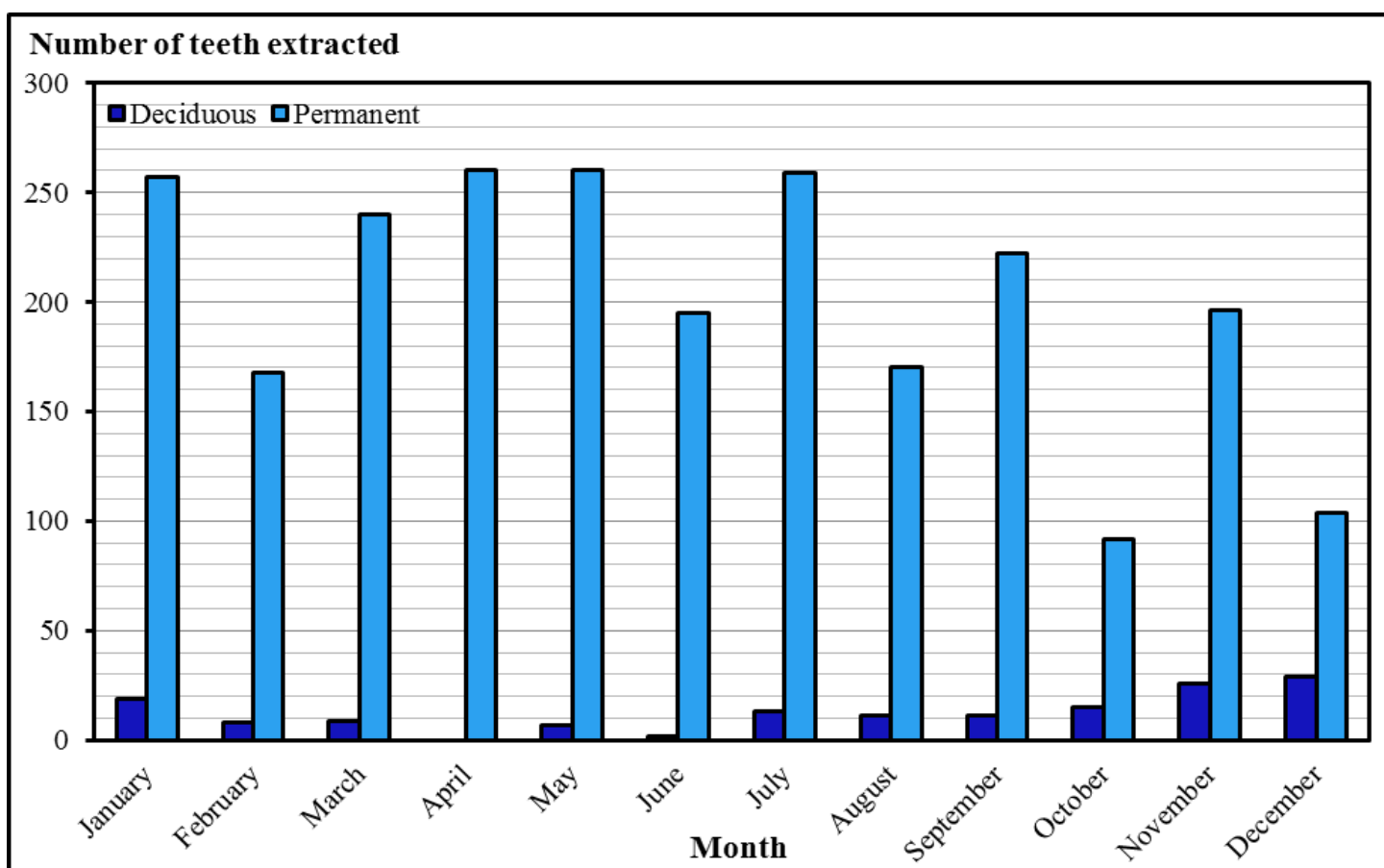
**Figure 4.2.2a** Annual attendances of Oral Surgery Unit at RIPAS Hospital (2001-2012)



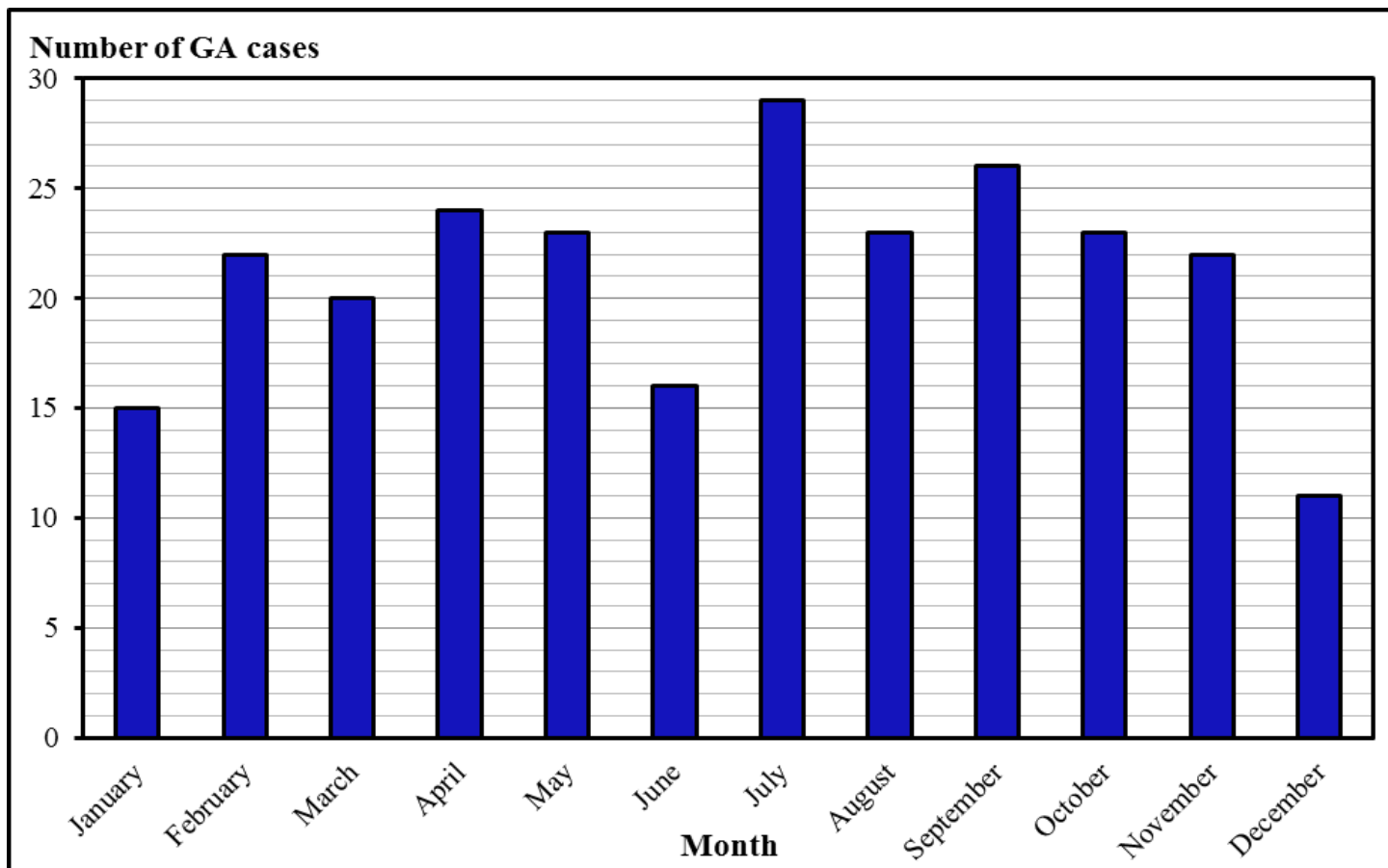
**Figure 4.2.2b** Number of patients attending Oral Surgery Unit for the whole state by month (2012)



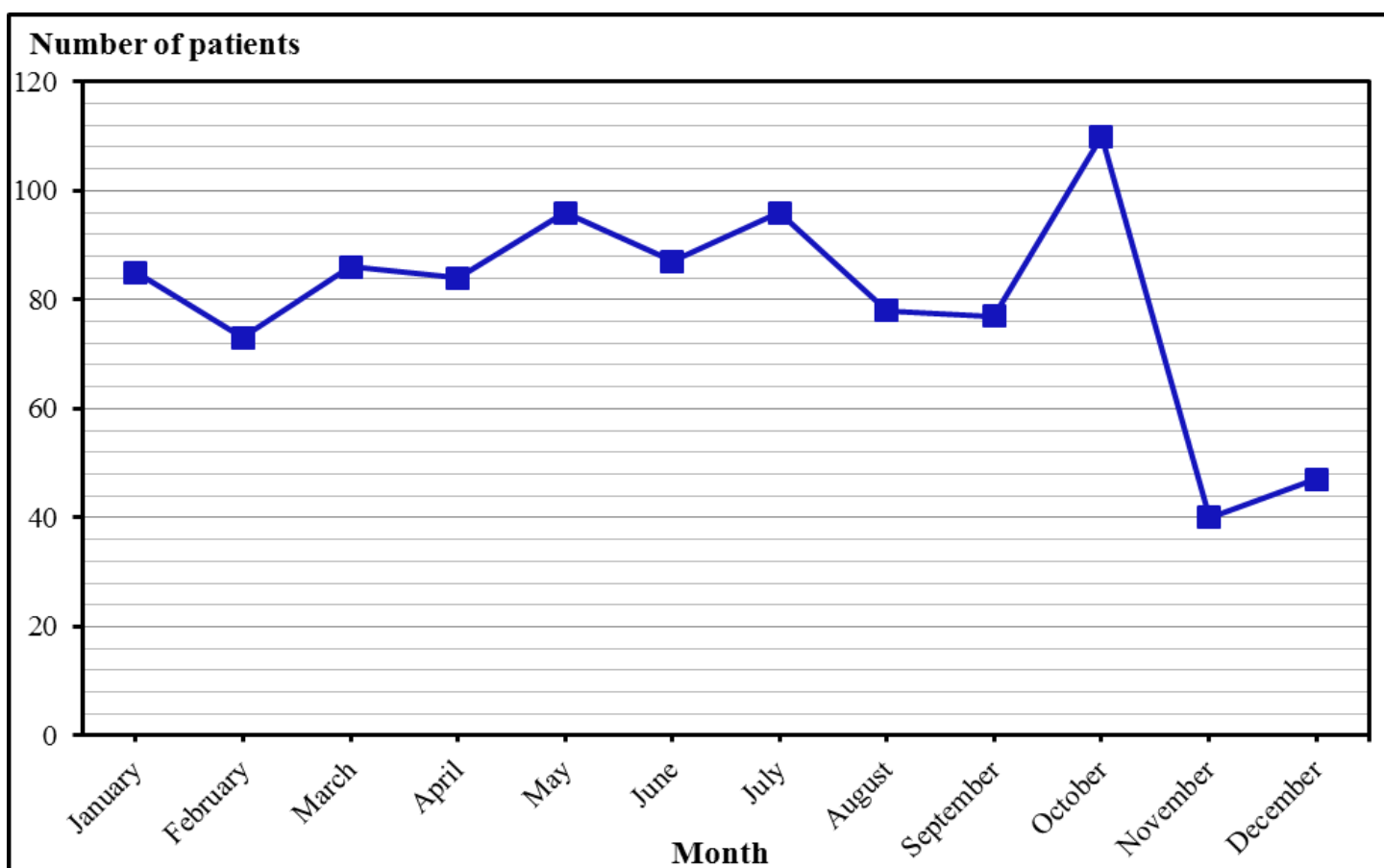
**Figure 4.2.2c** Number of different surgical removal procedures done for the whole state (2010-2012)



**Figure 4.2.2d** Number of teeth extraction done by month (2012)



**Figure 4.2.2e** Number of GA cases done by month (2012)



**Figure 4.2.2f** Number of case completion by month (2012)

# PRODUCTIVITY – ORTHODONTICS

Orthodontics is the branch of dentistry that corrects teeth and jaws that are positioned improperly. The benefits of orthodontic treatment include a healthier mouth, a more pleasing appearance, and teeth that are more likely to last a lifetime.

## **Overview of Orthodontic Specialty Services**

### Manpower

3 (2 local and 1 expatriate) Specialists

3 (local) Acting Specialists

1 (local) Senior Dental Officer

### Distribution of ‘Specialist Orthodontists’ in the districts

#### ***Brunei-Muara***

5 full-time orthodontists (latest senior dental officer in orthodontics reported in March 2011).

#### ***Belait***

1 full-time orthodontist & 1 full-time senior dental officer in orthodontics.

Travelling services by a second orthodontist (once a month- winding down clinics).

#### ***Tutong***

Travelling services provided by 2 orthodontists - 4 days a month (once a week).

#### ***Temburong***

Travelling services are not currently undertaken at present due to the fact that there are not many ‘orthodontic referrals’ from the district.

## **Orthodontic Waiting lists at the end of 2012**

Patients currently being called off in

Brunei-Muara - 1,300 (November 2008)

Belait - 352 (January 2010)

Tutong - 152 (April 2010)

**Table 4.2.3a** Orthodontic patients ‘Attendance statistics’ for 3 districts (2010-2012)

Districts	Patient attendance <sup>a</sup>			Percentage distribution of patient attendance		
	2010	2011	2012	2010	2011	2012
Brunei-Muara	7,194	6,557	7,459	72.4	68.7	70.3
Belait	2,429	2,470	2,286	24.4	25.9	21.6
Tutong	320	518	860	3.2	5.4	8.1
<b>All combined</b>	<b>9,943</b>	<b>9,545</b>	<b>10,605</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>a</sup>Patient attendance includes patient seen for any orthodontic procedure or review

### Discussion

Total patient attendance has increased from 2011 to 2012 due to an increase in bracket kits.

**Table 4.2.3b** Patients ‘Failed to Attend’ (FTA) Orthodontic appointment for 3 districts (2010-2012)

Districts	Total number of appointments given			Patient attendance			Total number of ‘Failed To Attend’ (FTA) <sup>a</sup>			% of FTAs to number of appointments given		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Brunei-Muara	7,931	7,362	8,435	7,194	6,557	7,459	737	805	976	9.3	10.9	11.6
Belait	2,615	2,554	2,514	2,429	2,470	2,286	186	84	229	7.1	3.3	9.1
Tutong	341	557	928	320	518	860	21	39	68	6.2	7.0	7.3
<b>All combined</b>	<b>10,887</b>	<b>10,473</b>	<b>11,877</b>	<b>9,943</b>	<b>9,545</b>	<b>10,605</b>	<b>944</b>	<b>928</b>	<b>1,273</b>	<b>8.7</b>	<b>8.9</b>	<b>10.7</b>

<sup>a</sup>The value of FTA was calculated by the total number of appointments given *minus* the patient attendance

### Discussion

There has been a slight increase in the number of failed appointments, however this is proportionate to the number of total appointments given which has also increased.

**Table 4.2.3c** Orthodontic referrals for 3 districts (2010-2012)

Districts	ORTHODONTIC REFERRALS											
	No orthodontic treatment indicated <sup>a</sup>			Too early for definitive orthodontic treatment			Enter waiting list for fixed appliances treatment			Interceptive treatment <sup>b</sup>		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Brunei-Muara	74	72	72	35	33	36	350	413	338	91	77	102
Belaït	15	17	4	11	7	5	121	96	117	18	18	4
Tutong	6	6	6	6	8	4	44	46	84	4	7	2
<b>All combined</b>	<b>95</b>	<b>95</b>	<b>82</b>	<b>52</b>	<b>48</b>	<b>45</b>	<b>515</b>	<b>555</b>	<b>539</b>	<b>113</b>	<b>102</b>	<b>108</b>

<sup>a</sup>No orthodontic treatment is indicated if patient is found to have (i) very mild irregularity of teeth and is aesthetically pleasing (ii) the risks outweigh the benefit of orthodontic treatment in cases of patients having poor oral hygiene and/or mutilated dentition (multiple missing teeth, teeth with poor prognosis, heavily filled teeth)

<sup>b</sup>refers to treatment provided to young patients having problems with the development and position of jaws

**Table 4.2.3d** Orthodontic treatment planning for 3 districts (2010-2012)

Districts	TREATMENT PLANNING					
	Fixed appliance treatment for cleft patients <sup>c</sup>			Patients taken off waiting list for fixed appliances treatment <sup>d</sup>		
	2010	2011	2012	2010	2011	2012
Brunei-Muara	8	1	12	318	184	336
Belaït	0	0	0	120	9	12
Tutong	0	0	0	24	16	45
<b>All combined</b>	<b>8</b>	<b>1</b>	<b>12</b>	<b>462</b>	<b>209</b>	<b>393</b>

<sup>c</sup>refers to only treatment planning and not review appointments for ongoing cleft patients. The treatment planning for some cleft patients who required fixed appliances treatment were deferred till 2012. This was attributed to the limited number of bracket kits available.

<sup>d</sup>from the number of patients taken off from the waiting list for fixed appliance treatment, some opt for delaying treatment till after exams/opt to start treatment after returning to Brunei for good (if studying abroad) or decide not to have treatment as they are not keen to have orthognathic surgery etc.

## Discussion

In general,

- There was an increase in the number of patients taken off the orthodontic waiting list. However, the number of patients entering the waiting list still far outweighs the number taken off the waiting list by 146 patients. This number is a reduction from the difference seen in 2011, where there were 306 patients in excess.
- The number of patients where no orthodontic treatment was indicated referred too early for definitive orthodontics, entering the waiting list for fixed appliance treatment and interceptive treatment has remained consistent.
- There was an increase in referral for cleft patients.

**Table 4.2.3e** Summary of various orthodontic procedures for 3 districts (2010-2012)

Districts	Number of appliances fitted <sup>a</sup> @per arch/per unit			Number of appliance adjustments <sup>b</sup> @per arch/ per unit			Number of appliance Repairs <sup>c</sup> @per arch/per unit			Debond of fixed appliances <sup>d</sup> @per arch/per unit		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Brunei-Muara	992	616	986	8,193	7,913	8,643	410	446	479	176	216	371
Belait	300	143	128	2,470	2,806	3,014	143	105	51	83	42	116
Tutong	24	71	111	309	536	826	17	59	45	6	18	24
<b>All combined</b>	<b>1,316</b>	<b>830</b>	<b>1,225</b>	<b>10,972</b>	<b>11,255</b>	<b>12,483</b>	<b>570</b>	<b>610</b>	<b>575</b>	<b>268</b>	<b>276</b>	<b>511</b>

<sup>a</sup>fitting of orthodontic appliances such as fixed, removable, functional appliances and others

<sup>b</sup>includes adjustments of fixed, removable, functional appliances and others

<sup>c</sup>includes repairs of broken orthodontic appliances such as fixed, removable, functional appliances and others

<sup>d</sup>Debond of fixed appliances by arch – removal of fixed appliances from upper/ lower/both arches where each arch is recorded as ‘a unit’

## Discussion

There was an increase in the number of appliance adjustments for the Belait district. This could be attributed due to a Senior Dental Officer in Orthodontics who joined in March 2011.



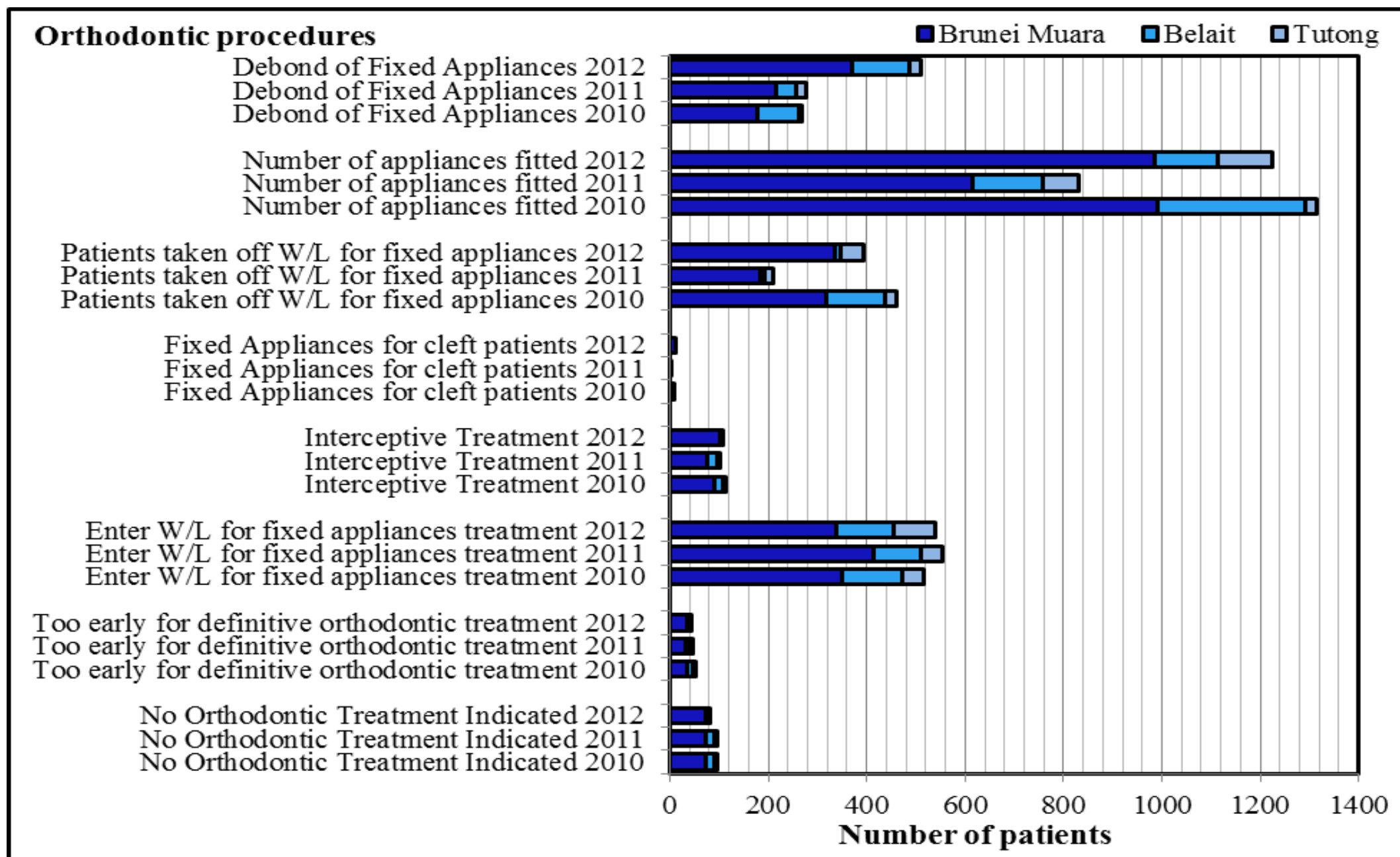


Figure 4.2.3 Comparative summary of orthodontic patient data for 2010-2012

# PRODUCTIVITY – PAEDODONTICS

Paediatric Dentistry specialises in provision of oral health care (preventive- and treatment-oriented) to children that are referred to the unit and the management of children with special needs. This includes providing dental care for children with medical, physical and intellectual challenges.

## **Overview of Paediatric Dental Specialty Services**

### Manpower

5 (4 local and 1 expatriate) Specialists

1 (expatriate) Senior Dental Officer

5 (local) Paediatric Dental Nurses

### Distribution of ‘Paediatric Dental Specialist’ in the districts

#### ***Brunei-Muara***

- 3 Paediatric Dental Specialists, 1 Paediatric Senior Dental Officer and 1 Paediatric Senior Dental Nurse at National Dental Centre.
- 2 Paediatric Dental Specialists and 1 Paediatric Senior Dental Nurse at Hospital RIPAS.
- 1 visiting Paediatric Dental Specialist at Child Development Centre (CDC) twice a month (started in August 2012). 2 visiting Paediatric Dental Nurses at CDC 3 days a week (started in July 2012).

#### ***Belait***

- 1 visiting Paediatric Dental Specialist- 3 days a week.
- 1 visiting Paediatric Dental Nurse- 3 days a week.

#### ***Tutong***

- 1 visiting Paediatric Senior Dental Officer- 3 days a month.
- 1 visiting Paediatric Dental Nurse- once a week.

#### ***Temburong***

Services provided by Paediatric Dental Nurse - 2 days a month. Cases are referred to Paediatric Dental Specialist in Hospital RIPAS when needed.

**Table 4.2.4a** Number of patients and preventive procedures done in the Paedodontics Unit (2012)

Age group	Attendances		Patient Consultation		PREVENTIVE						
	1st	Repeat	Self	Referred	PV Attendances	OHI	Scaling & Prophylaxis	Diet Counseling	Fluoride Varnish	Fissure Sealant	
										Patient	Teeth
Brunei-Muara											
0-5	505	683	37	236	800	687	406	430	91	157	508
6-12	827	1,372	69	345	1,462	1,218	1,087	917	51	467	2,119
13-19	452	594	40	217	643	543	583	530	30	216	1,222
Belait											
0-5	88	126	0	30	213	178	128	158	71	7	27
6-12	180	219	0	43	398	367	294	328	64	16	59
13-19	31	55	0	7	84	66	50	59	13	4	11
Tutong											
0-5	44	43	3	23	72	57	20	21	4	2	3
6-12	73	118	0	35	137	117	86	44	1	76	273
13-19	27	23	0	13	45	42	27	12	1	30	108
Temburong											
0-5	2	6	0	0	8	8	8	0	0	4	8
6-12	5	9	0	0	14	14	14	0	0	4	10
13-19	2	2	0	0	4	4	2	0	0	2	2
All combined	2,236	3,250	149	949	3,880	3,301	2,705	2,499	326	985	4,350

**Table 4.2.4b** Number of restorative procedures done in the Paedodontics Unit (2012)

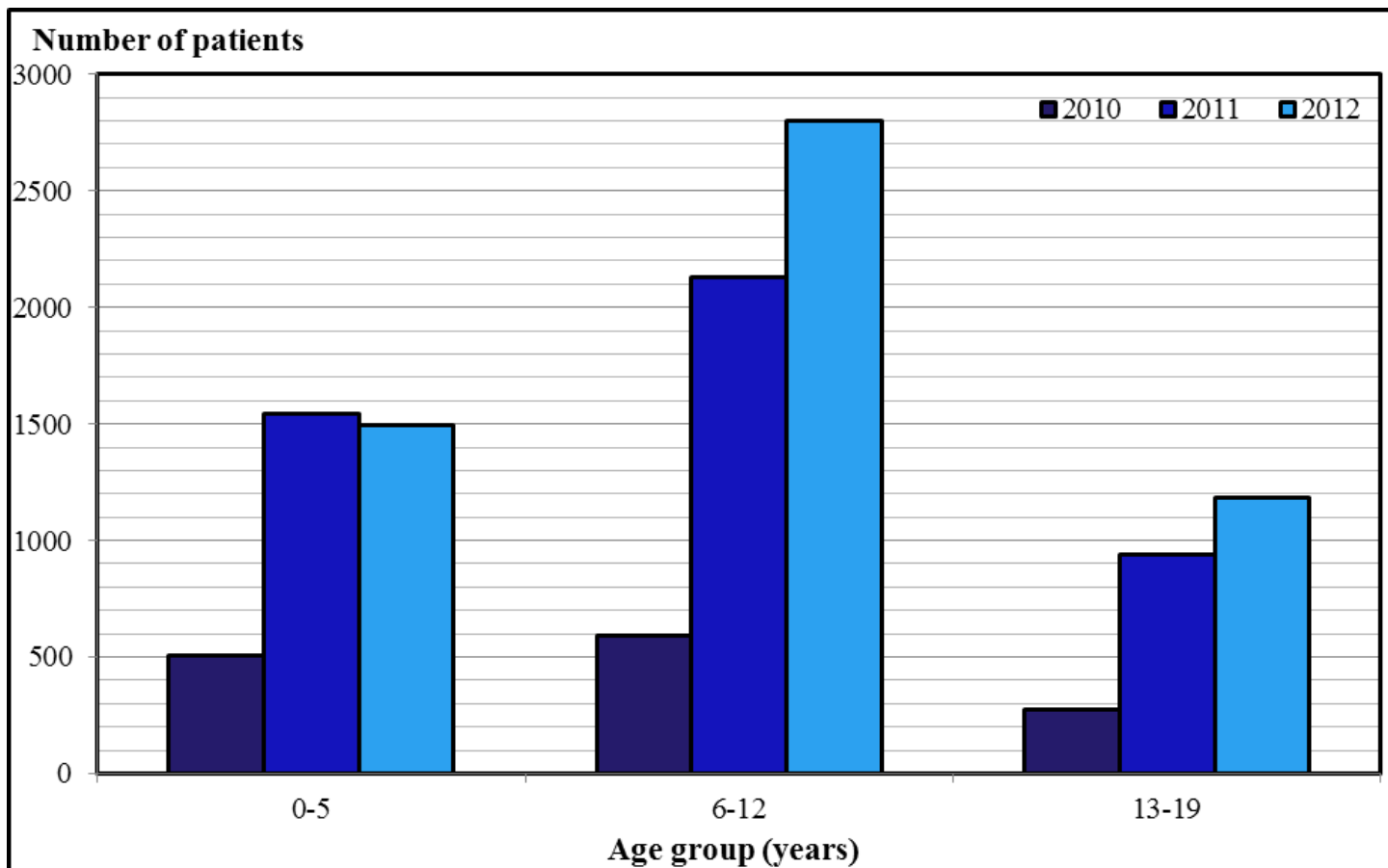
Age group	CONSERVATIVE										ENDODONTICS					PROS- THETIC
	Amalgam		Tooth-coloured				Teeth Permanently Filled		Dressing		Procedure (Patient)	Anterior Completion (Teeth)		Posterior Completion (Teeth)		Completion (Units)
			GIC		Composite							D      P		D      P		
	Teeth	Surfaces	Teeth	Surfaces	Teeth	Surfaces	Teeth	Surfaces	Teeth	Surfaces		D	P	D	P	
Brunei-Muara																
0-5	6	7	443	566	39	48	488	621	66	68	21	6	0	8	0	0
6-12	7	8	674	966	186	283	867	1,257	152	183	63	8	6	14	9	7
13-19	20	24	228	307	252	389	500	720	67	72	36	0	7	3	3	10
Belait																
0-5	4	4	87	129	6	9	97	142	18	23	0	0	0	0	0	1
6-12	0	0	106	172	17	26	123	198	29	37	5	0	1	0	0	0
13-19	1	2	32	47	8	17	41	66	10	12	7	0	0	0	0	1
Tutong																
0-5	0	0	27	37	0	0	27	37	6	6	4	0	0	0	0	0
6-12	0	0	73	120	17	22	90	142	9	11	8	0	0	0	0	0
13-19	0	0	22	31	14	24	36	55	0	0	0	0	0	0	0	0
Temburong																
0-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6-12	1	1	2	2	3	3	6	6	0	0	0	0	0	0	0	0
13-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All combined	40	47	1,694	2,377	542	821	2,275	3,243	357	412	144	14	14	25	12	19

D - Deciduous teeth, P - Permanent teeth

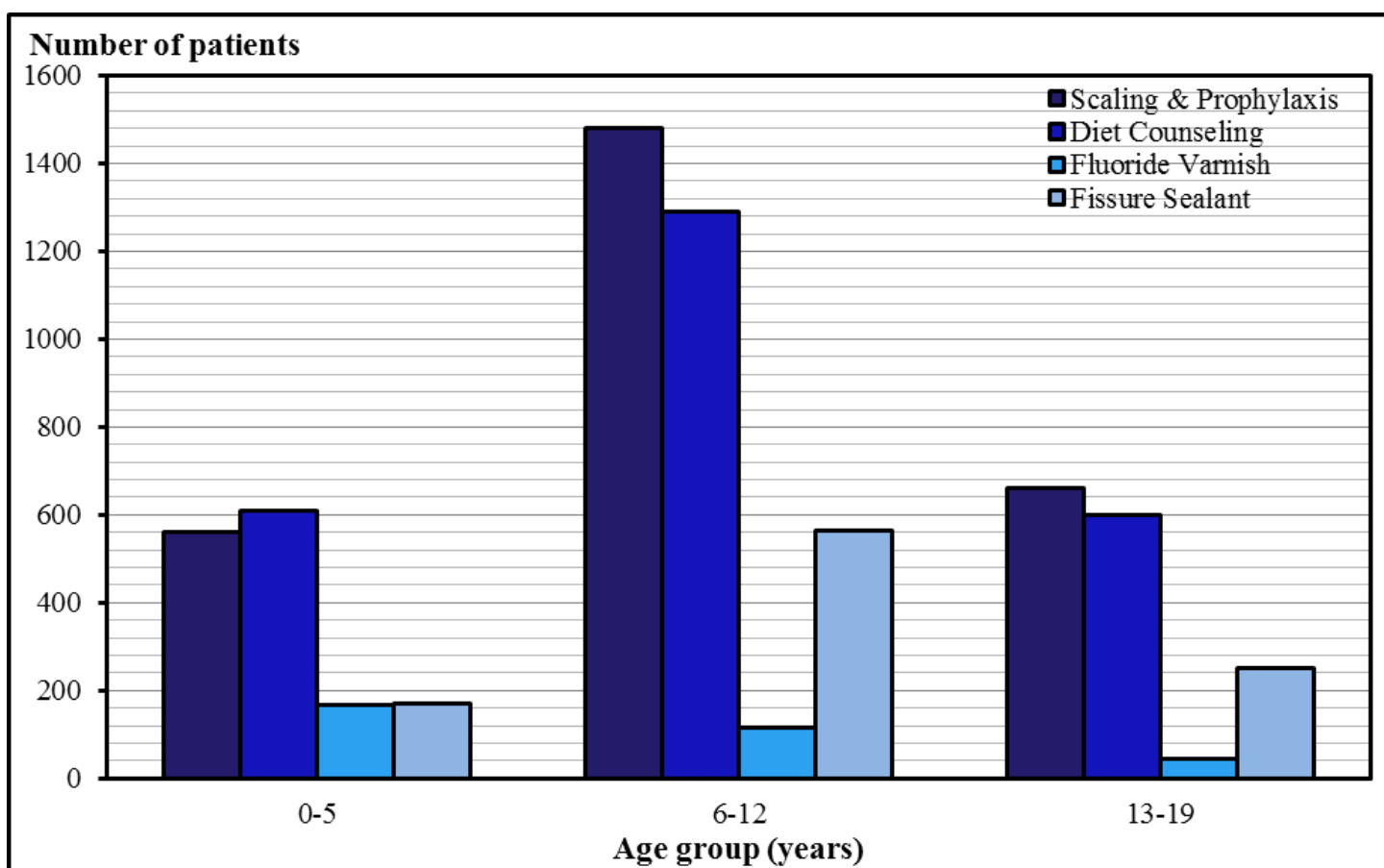
**Table 4.2.4c** Number of oral surgical procedures done in the Paedodontics Unit (2012)

Age group	ORAL SURGERY																REFERRAL PATIENTS TO:		CASE COMPLETION
	Infection/Abscess (Pt)	TRAUMA				LA/TA/SEDATION				GA				Oral Mucosal Lesions	Other Dental Specialty  Medical				
		No. of Teeth	Hard Tissue (Pt)	Soft Tissue (Pt)	Splinting	Patients	No. of Teeth Extracted		Patients	No. of Teeth Extracted									
							D	P		D	P								
							pathological	non-pathological		pathological	non-pathological	pathological	non-pathological				pathological	non-pathological	
Brunei-Muara																			
0-5	270	51	15	11	0	40	42	10	0	0	111	1,479	0	0	0	8	39	14	346
6-12	123	18	6	5	1	236	171	45	88	11	85	661	0	129	0	7	102	13	581
13-19	29	2	0	3	1	147	29	6	107	33	7	0	0	22	0	5	101	6	329
Belait																			
0-5	3	2	1	1	0	22	28	3	0	0	8	103	0	0	0	1	0	0	45
6-12	0	3	0	0	0	93	91	16	0	0	9	110	0	0	0	0	0	1	86
13-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	16
Tutong																			
0-5	2	3	0	0	0	3	4	0	0	0	0	0	0	0	0	1	7	1	16
6-12	2	7	0	1	0	16	16	4	0	1	0	0	0	0	0	0	13	0	43
13-19	1	0	0	0	0	5	5	0	1	0	0	0	0	0	0	0	2	2	10
Temburong																			
0-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
6-12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
13-19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
All combined	430	86	22	21	2	562	386	84	196	45	220	2,353	0	151	0	22	267	37	1,481

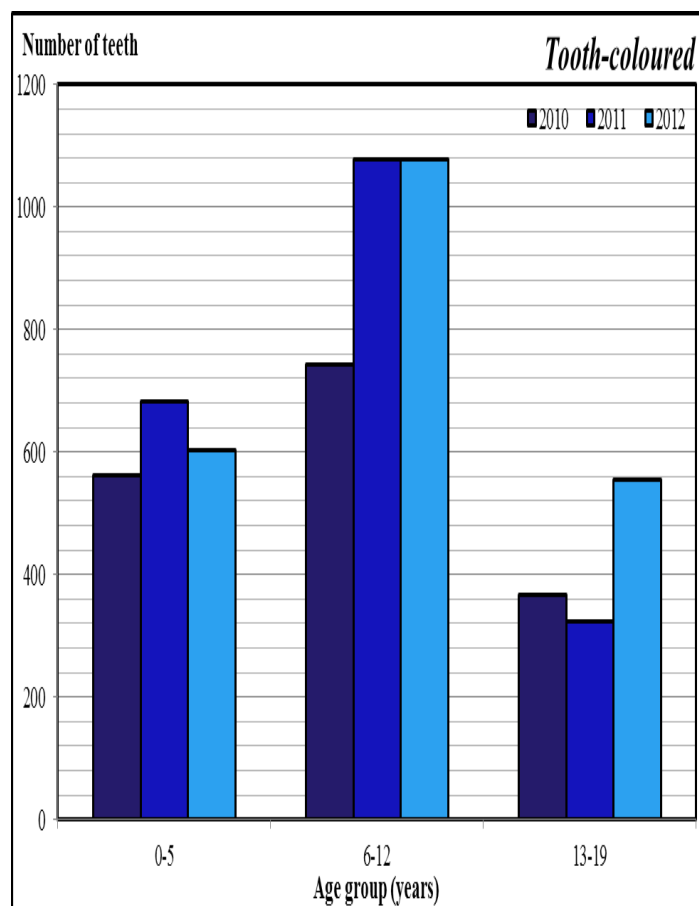
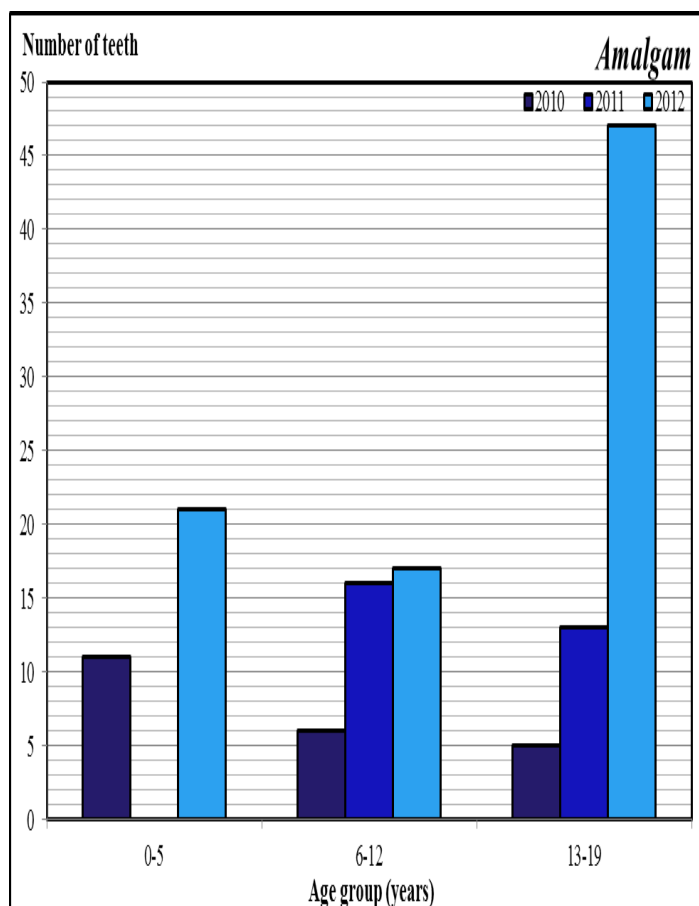
D - Deciduous teeth, P - Permanent teeth



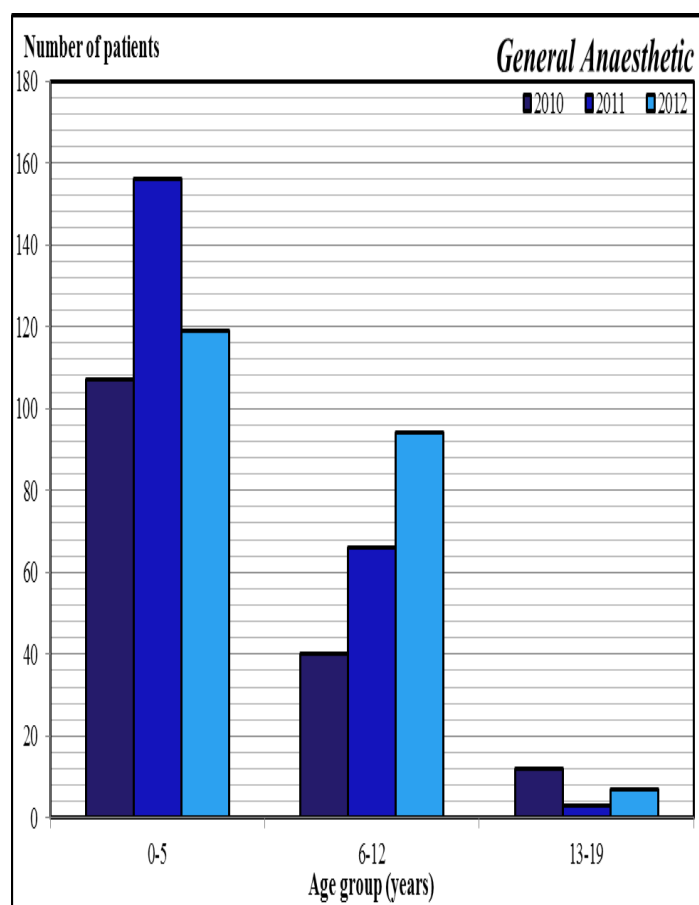
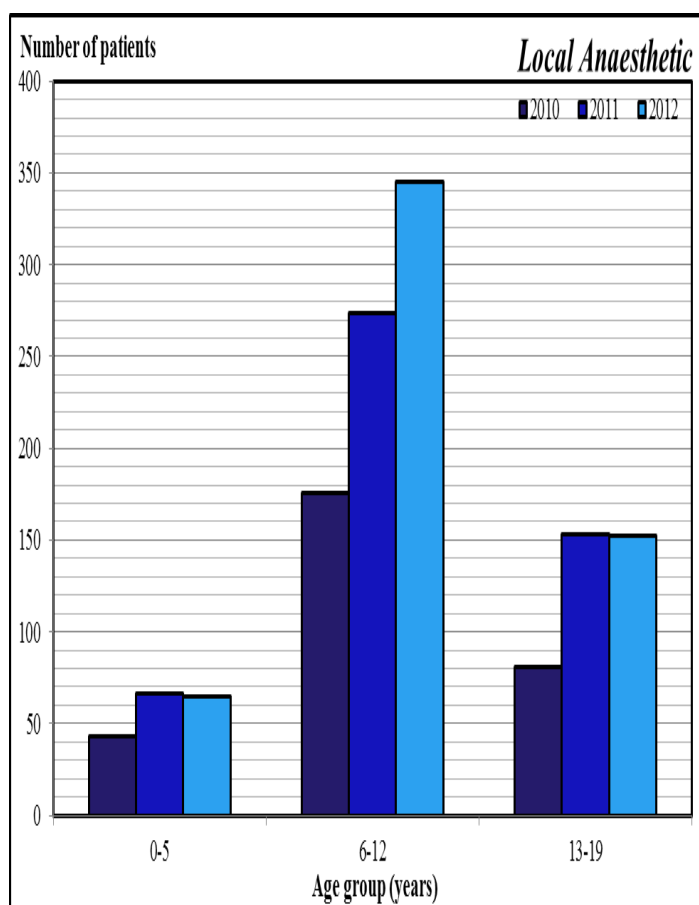
**Figure 4.2.4a** Number of patients treated by age group (2010-2012)



**Figure 4.2.4b** Number of patients given preventive treatment by age group (2012)



**Figure 4.2.4c** Number of patients given conservative treatment by age group (2010-2012)



**Figure 4.2.4d** Number of patients given oral surgical treatment by age group (2010-2012)

# PRODUCTIVITY – PERIODONTICS

Periodontics is the branch of dentistry that is concerned with the management and care of the supporting structures of teeth and its substitutes (including implants).

Services provided include:

- Oral hygiene instructions
- Comprehensive periodontal management and care (which may include ‘non-surgical’ and ‘surgical’ treatment)
- Periodontal management care of patients with dental implants (if required)

## **Overview of Periodontic Specialty Services**

### Manpower

2 (local) Specialist

11 (local) Dental Hygienists

### Distribution of ‘Specialist Periodontist’ in the districts

#### ***Brunei-Muara***

2 full-time Periodontists (based in the National Dental Centre, Berakas).

#### ***Belait***

Travelling services provided by the 2 Periodontists; once a week (4 days a month with the exception of the fasting month).

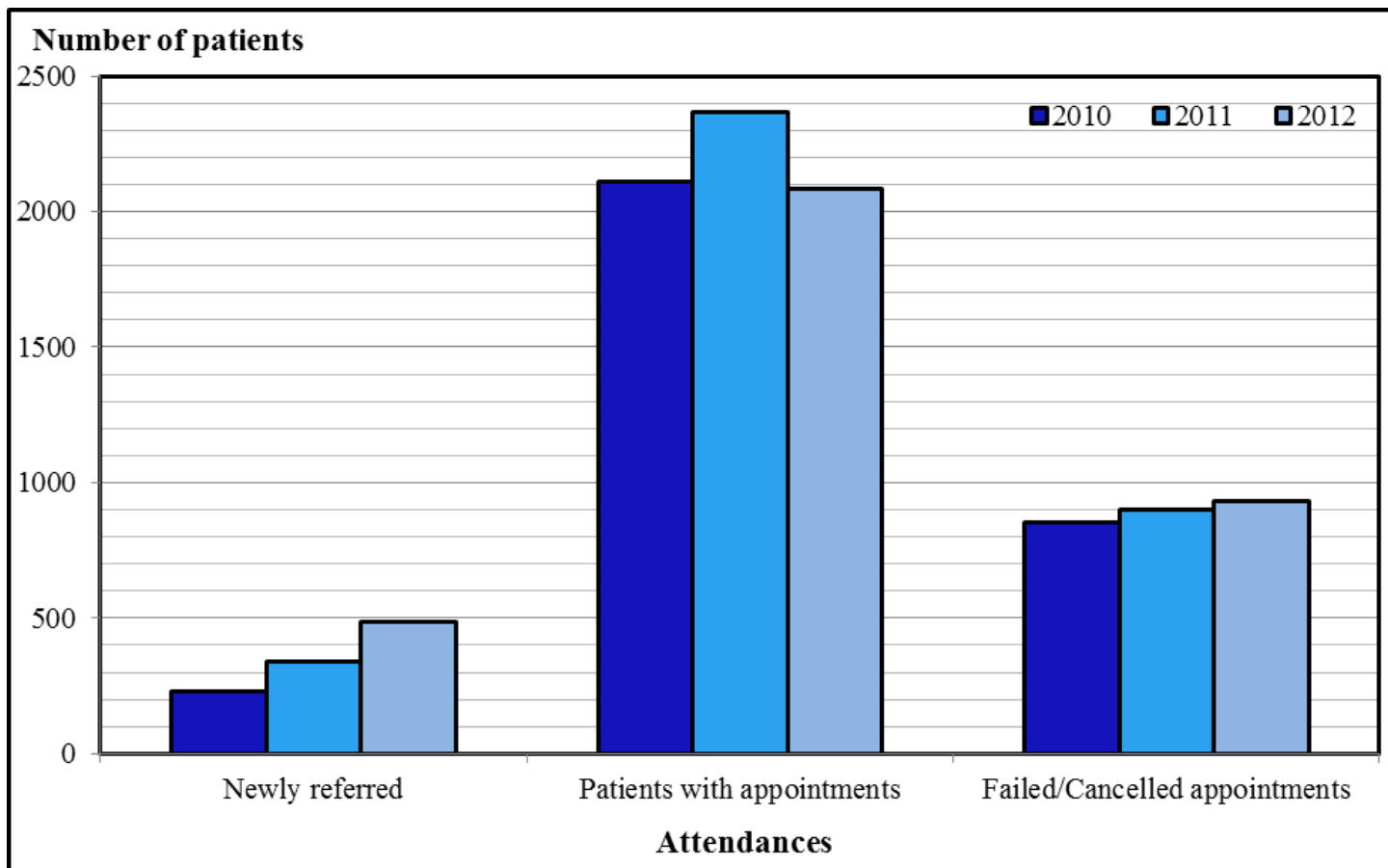
#### ***Tutong & Temburong***

Referred cases are seen in the National Dental Centre, Berakas, as the number of referral cases is not sufficient in numbers to justify travelling Periodontic services to the 2 districts (very few referred cases especially from Temburong).

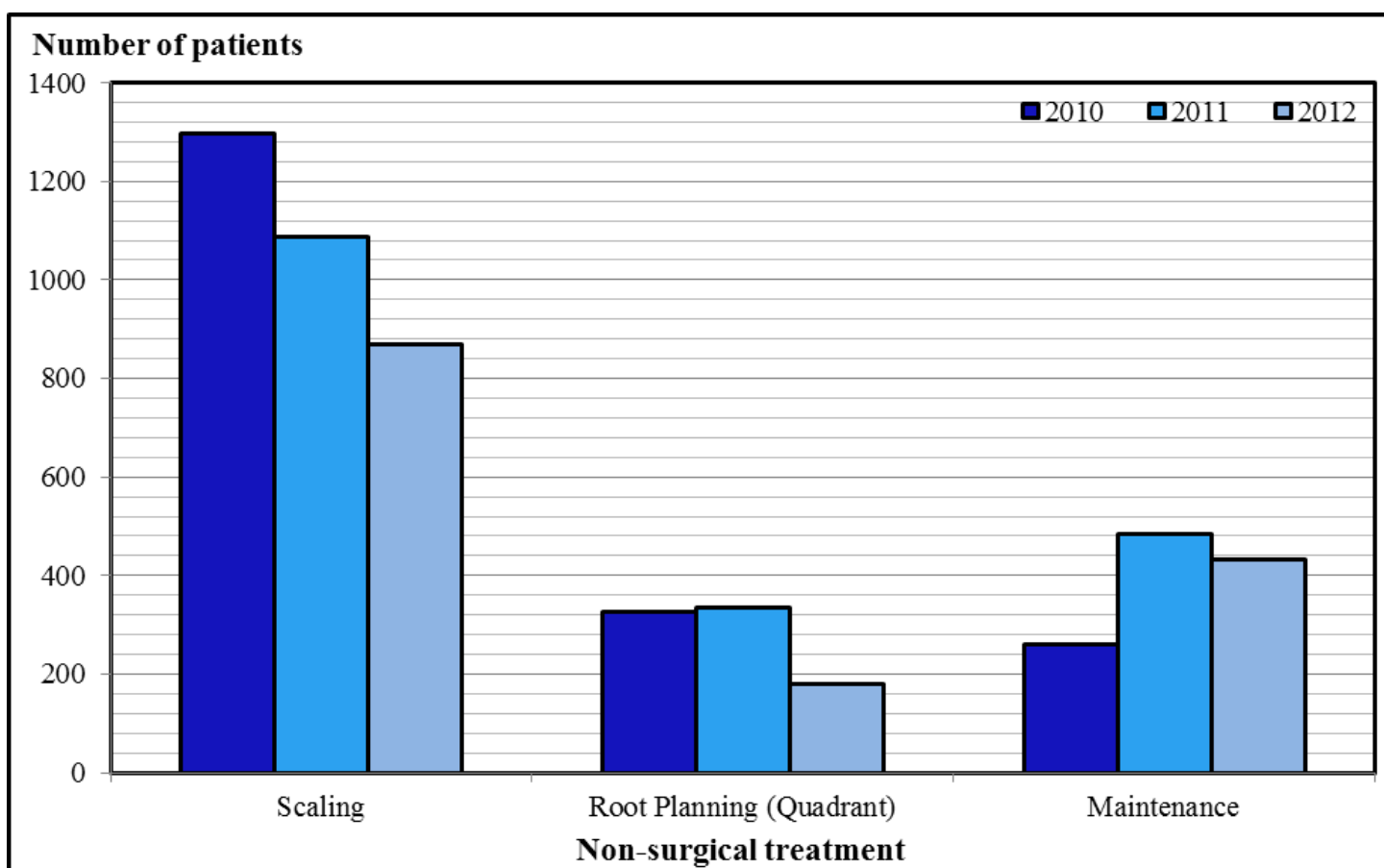


**Table 4.2.5** Number of patients and treatment done in Periodontics Unit (2012)

Age group	Attendances			Patient Consultation (Exam & Charting)	Oral Hygiene & Demo	Non-surgical			Surgical	Extraction		Head & Neck Cancer Patients
	Newly Referred Specialist/DO/DN/DH/DT	No. of Patients with Appointments	Failed/Cancelled Appointment			Scaling	Root Planning (Quadrant)	Maintenance		Pathological	Non-pathological	Post Radiotherapy Maintenance
Brunei-Muara												
6-12	2	5	3	0	9	5	0	4	0	0	0	0
13-19	28	123	75	21	121	68	3	9	1	0	0	9
20-55	408	1,697	765	229	745	720	149	301	28	15	2	8
>55	38	226	79	37	113	72	26	113	1	1	0	7
Belait												
6-12	0	0	0	0	0	0	0	0	0	0	0	0
13-19	0	0	0	0	0	0	0	0	0	0	0	0
20-55	9	27	9	9	7	2	2	4	0	0	0	78
>55	1	8	0	1	1	1	0	1	0	0	0	0
All combined	486	2,086	931	297	996	868	180	432	30	16	2	102



**Figure 4.2.5a** Number of patients by different categories of attendances (2010-2012)



**Figure 4.2.5b** Number of patients by non-surgical treatments (2010-2012)

# PRODUCTIVITY – PROSTHODONTICS

Prosthodontics is the branch of dentistry that specialises in the replacement of missing teeth or other structures of the oral cavity with prostheses in order to restore the patient's appearance, comfort, function and/or health.

Services provided include:

- Consultation and giving second opinions
- Providing comprehensive dental care
- Referral for stabilising treatment such as Dental Surgery, Endodontic, Periodontic and Orthodontic treatments according to patients' treatment needs
- Complex direct restorative treatments such as amalgam onlays and composite restorations to improve tooth morphology
- Indirect restorative treatment such as inlays, onlays, veneers or crowns
- Replacement of missing teeth with removable prostheses
- Replacement of missing teeth with fixed prostheses such as bridges
- Replacement of missing teeth with fixed or removable prostheses supported by dental implants
- Complex multidisciplinary restorative treatment
- Surgical crown-lengthening prior to provision of dental crowns or bridges
- Providing occlusal bite raising appliances to patients suffering from temporo-mandibular joint dysfunctions (TMJDs) or bruxism, for the relief of associated muscles and joint pain

## **Overview of Prosthodontics Specialty Services**

### Manpower

2 (local) Specialists

1 (expatriate) Senior Dental Officer

The Prosthodontic Unit is based at the National Dental Centre, Brunei-Muara. Travelling services to Belait are provided by 2 prosthodontists once a week; while patients from Tutong and Temburong are referred to the National Dental Centre.

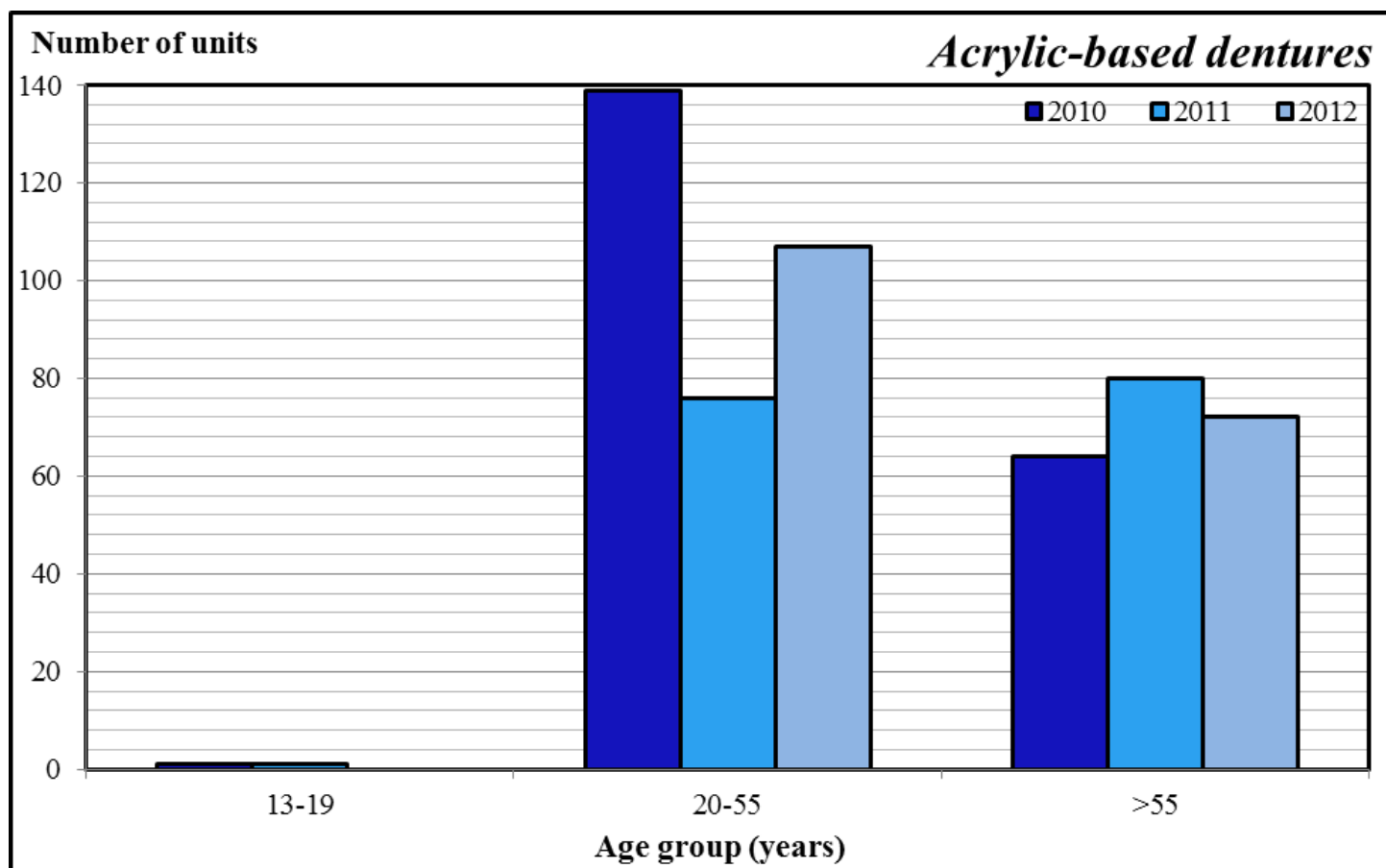
**Table 4.2.6a** Number of patients and treatment done in the Prosthodontics Unit (2012)

Age group	FIXED PROSTHODONTICS											ENDODONTICS (includes pulpotomy)			
	Procedures (Patient)	Recementation of crowns/bridge (units)	Temporary crowns/ Bridge (units)	Posts (units)	Crown						Bridge (Total & Units)		Procedures (patients)	Teeth	
					Anterior			Posterior		Total Units Issued	Bridge	Units		New	Repeat
					Veneer	FPC	PBC	PBC	FPC						
6-12	1	0	0	0	0	0	0	0	0	0	0	0	2	2	0
13-19	6	0	1	0	0	0	0	0	0	0	0	0	12	9	1
20-55	372	52	344	51	15	25	44	97	1	160	73	220	150	94	34
>55	84	71	125	15	0	1	21	17	0	47	18	57	25	11	5
All combined	463	123	470	66	15	26	65	114	1	207	91	277	189	116	40

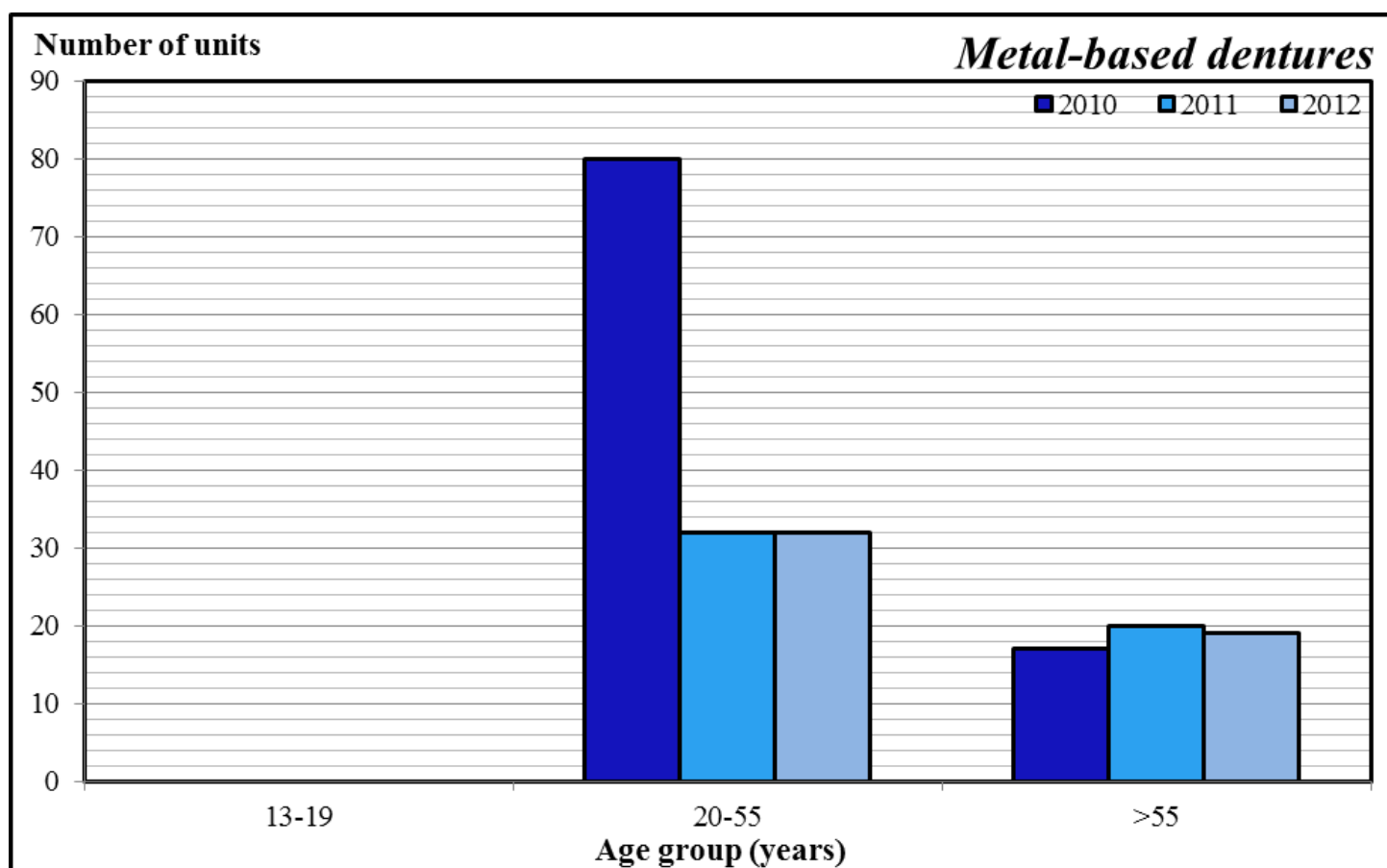
FPC – Full Porcelain Crown, PBC – Porcelain Bonded Crown

**Table 4.2.6b** Number of patients and treatment done in the Prosthodontics Unit (2012)

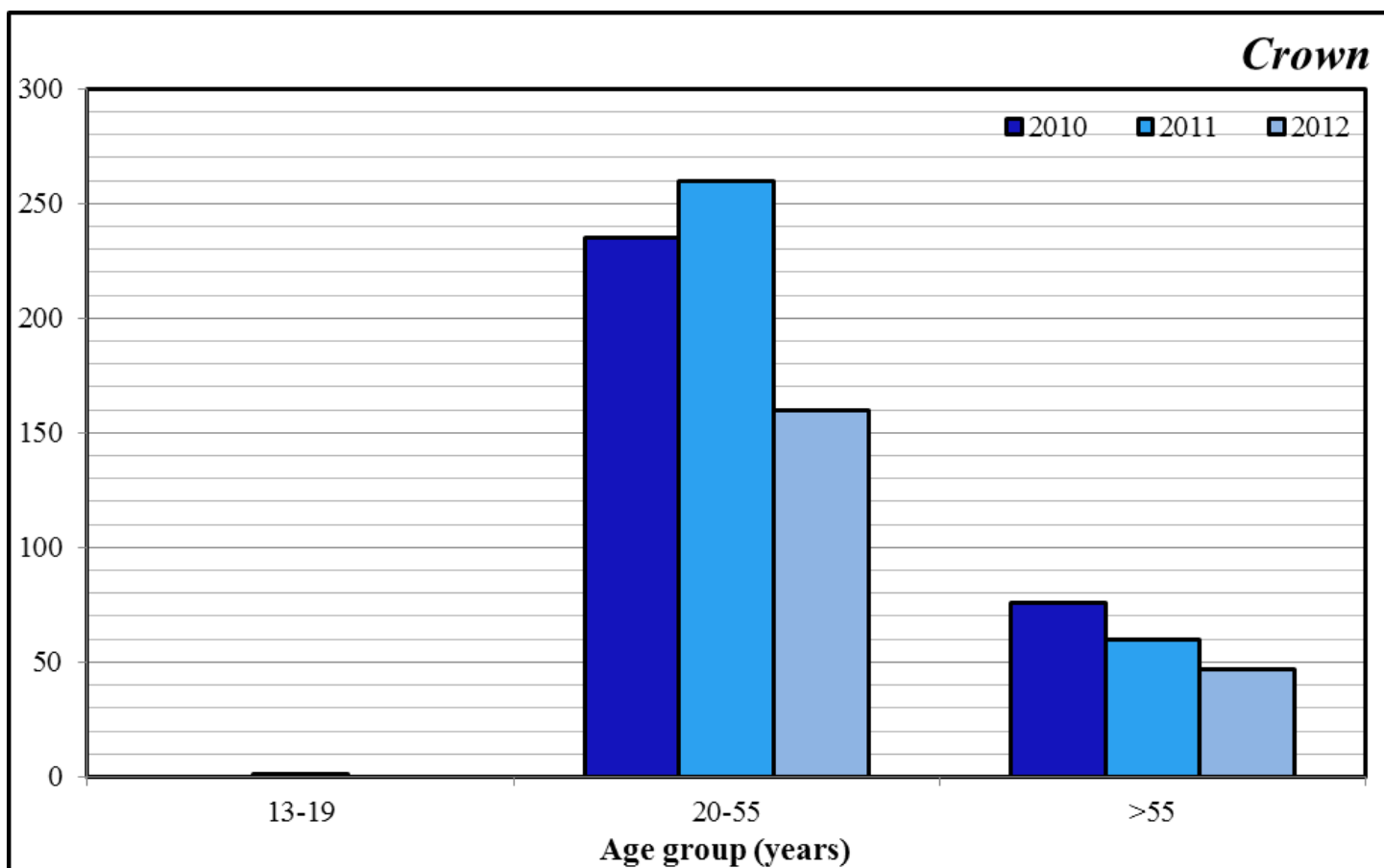
Age group	PROSTHETIC				CONSERVATIVE			ORAL SURGERY	PERIODONTICS	
	Acrylic-based (number of units issued)		Metal-based	Repairs	Relines	Total number of Teeth & Surfaces Permanently Filled		No. of Teeth Extracted (Surgical)	No. of Scaling & Prophylaxis (Non-Surgical)	
	Full denture	Partial denture				Teeth	Surfaces			
							New			Repeat
6-12	0	0	0	0	0	2	2	0	0	
13-19	0	0	0	0	0	46	88	2	4	
20-55	5	102	32	13	9	146	351	20	91	
>55	51	21	19	9	4	9	18	0	20	
All combined	56	123	51	22	13	203	459	22	115	



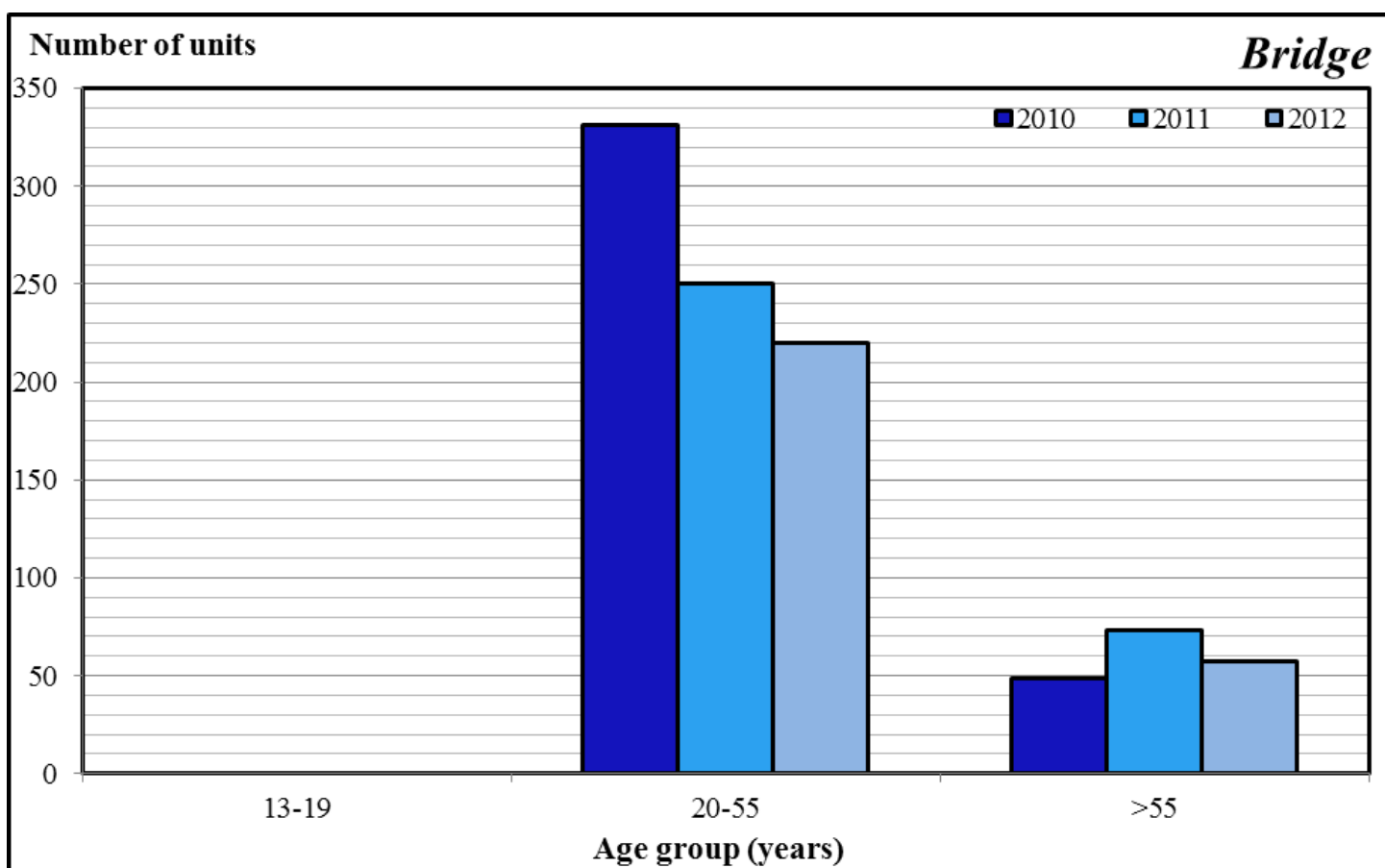
**Figure 4.2.6a** Number of acrylic-based dentures issued by age group (2010-2012)



**Figure 4.2.6b** Number of metal-based dentures issued by age group (2010-2012)



**Figure 4.2.6c** Number of crowns issued by age group (2010-2012)



**Figure 4.2.6d** Number of bridges issued by age group (2010-2012)

# PRODUCTIVITY – RESTORATIVE

The Restorative Unit involves both surgical and restorative aspects of implant dentistry, with special attention to patient care under comprehensive treatment planning.

Services provided include:

- Consultation
- Investigations
- Diagnosis
- Treatment planning and referrals
- Surgery - Routine clinical procedures
- Replacement of missing teeth:
  - Single tooth gap
  - Multiple missing teeth
- Surgery - Advance clinical procedures
- Full mouth rehabilitation
- Ridge augmentation
- Sinus floor elevation

## **Overview of Restorative Specialty Services**

### Manpower

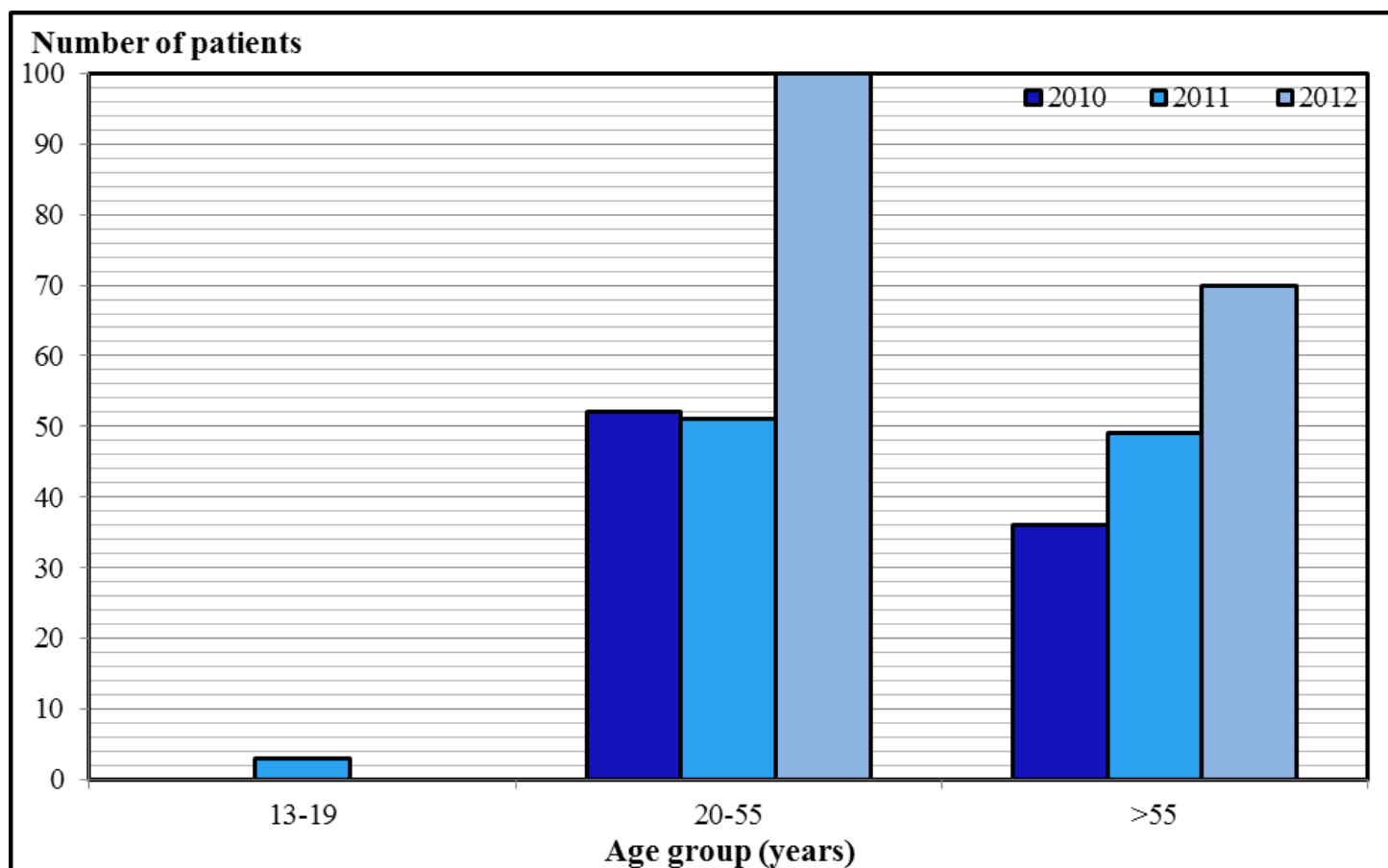
1 (local) Specialist

The Restorative Unit is based at the National Dental Centre, Brunei-Muara and accepts referrals from government and private dental clinics throughout Brunei Darussalam.

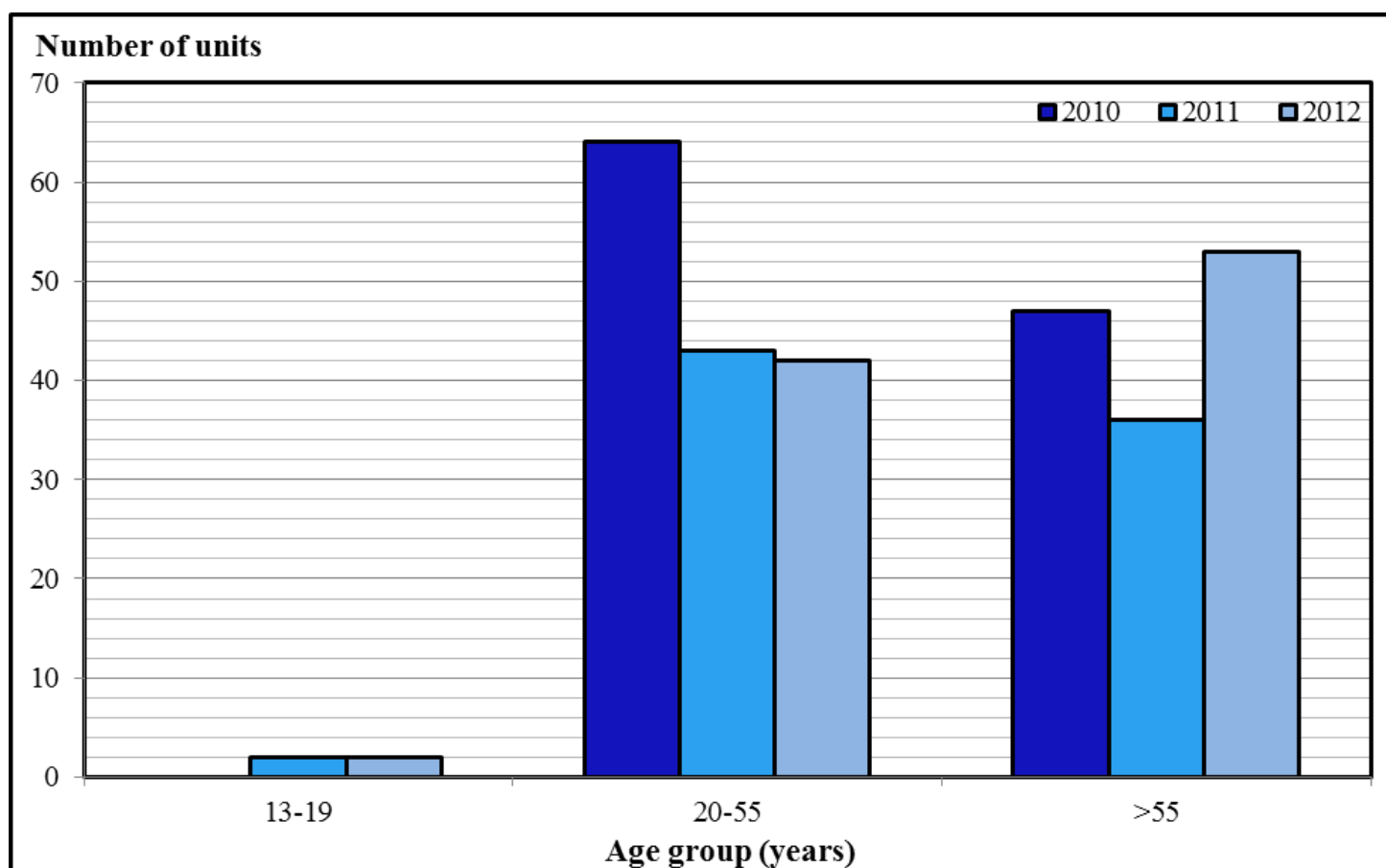


**Table 4.2.7** Number of patients and treatment done in the Restorative Unit (2012)

Age group	Consultations		Implant Surgery		Total number of Implants, Crowns, Bridges and Dentures					
	Self	Referred	Procedure (Patients)	Units of Implant placed	Procedure (Patients)	Fixed (Units)			Removable (Units)	
						Implant	Abutment	Pontic	Implant	Upper Full Denture Lower Full Denture
13-19	0	0	0	0	0	0	0	0	0	0
20-55	9	91	41	70	262	42	47	0	0	0
>55	16	54	39	111	209	53	53	8	0	0
<b>All combined</b>	<b>25</b>	<b>145</b>	<b>80</b>	<b>181</b>	<b>471</b>	<b>95</b>	<b>100</b>	<b>8</b>	<b>0</b>	<b>0</b>



**Figure 4.2.7a** Number of patients treated by age group (2010-2012)



**Figure 4.2.7b** Number of implants by age group (2010-2012)

# PRODUCTIVITY – ORAL HEALTH PROMOTION

Oral Health Promotion is the branch of dentistry which is practiced in relation to population and group, which drives from epidemiology and awareness of service required to organise the application of these services for the benefit of the population.

Goals:

1. To reduce the prevalence of dental caries and periodontal disease in the population.
2. To strengthen the Oral Health Promotion Division to oversee all oral health promotion activities.
3. To target population that is at risks to oral diseases and to utilise proven interventions.

## Overview of Oral Health Promotion (OHP) Division

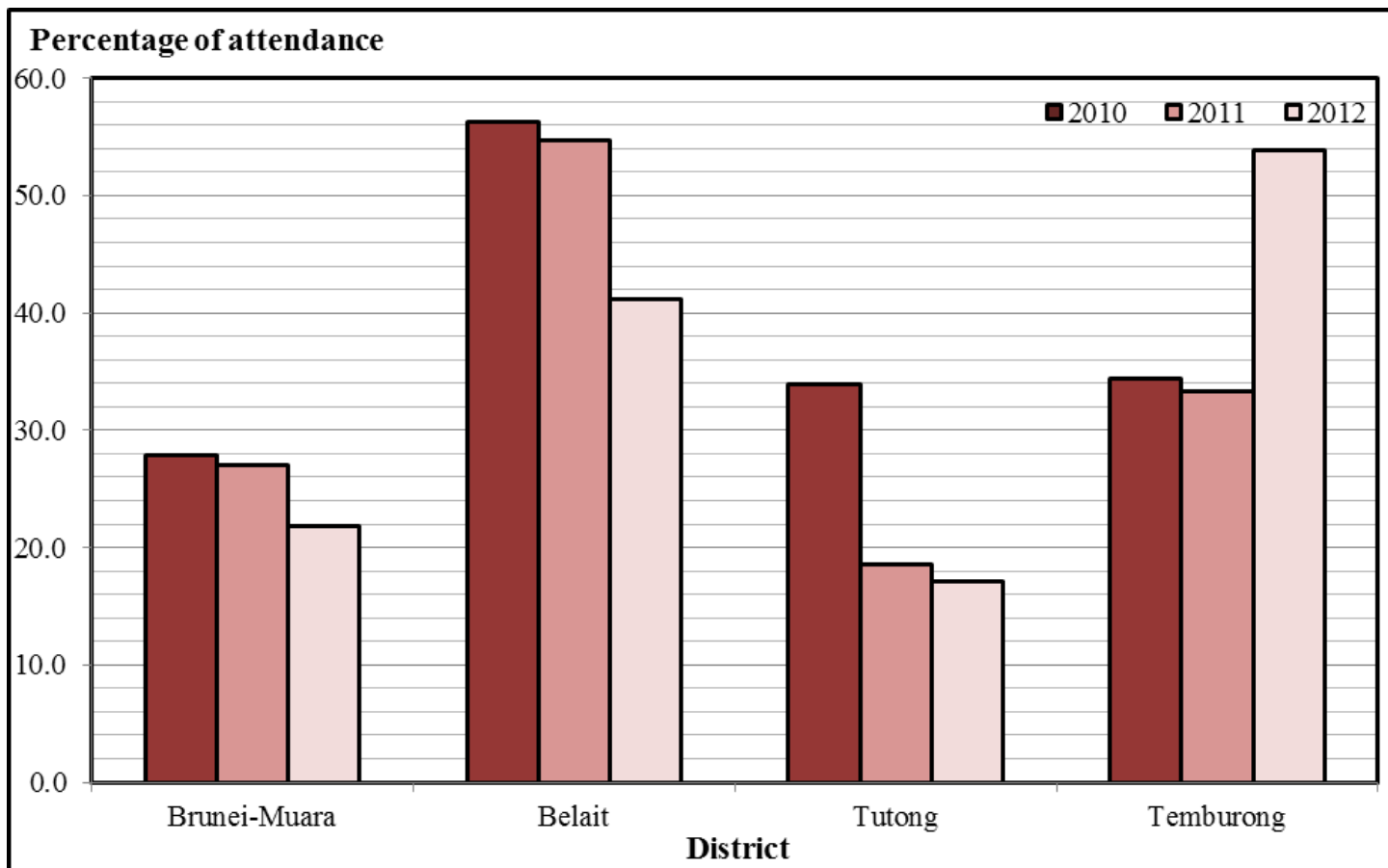
### Manpower

- 1 (local) Acting Specialist
- 1 (local) Dental Officer
- 3 (expatriate) Dental Officers – 1 full-time
- 1 (local) Acting Senior Dental Nursing Officer – part-time
- 1 (local) Senior Staff Dental Nurse
- 3 (local) Staff Dental Nurse
- 1 (local) Clerk

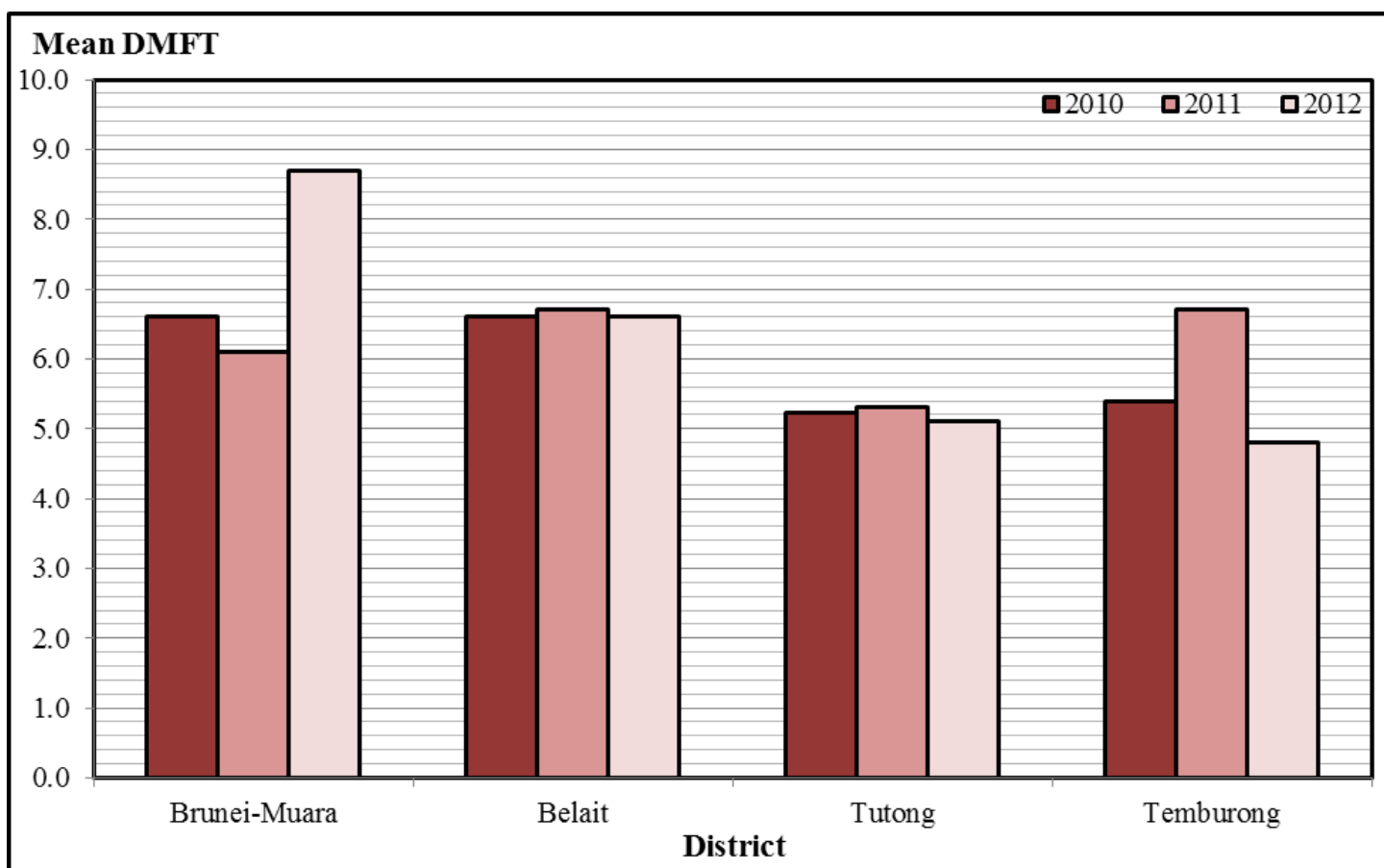
### Services throughout the State

#### **1. Antenatal Oral Health Care Programme**

The main aim of the programme is to render comprehensive dental treatment and impart oral health education to ante-natal mothers with special emphasis on taking care of their infant's teeth and feeding practices. The programme aims to empower the expectant mother towards self-care; attaining good oral health for themselves, their infants and their families; thereby, improving their oral health status. It also aims at increasing the utilisation of oral health care services among antenatal mothers and provides them with systematic oral health care and dental health education. Dental antenatal mothers' cards have been redesigned by Oral Health Promotion Division and printed by the government printing department. A total number number of 6,000 cards have been printed, and distributed to all maternity and child health centres (MCH) in all 4 districts (23 MCH clinics). The number of antenatal mothers attending the antenatal clinics in MCH in 2012 is 6,753; and 1,666 (24.6% of antenatal mothers in 2012) attended dental clinics. A summary of antenatal attendances is presented in Figure 4.3.



**Figure 4.3a** Percentage of antenatal patient attendances at dental clinics by districts (2010-2012)



**Figure 4.3b** Mean DMFT for antenatal patients attending dental clinics by district (2010-2012)

## 2. Daily Fluoridated Toothbrushing Programme (DFTB) in Government Primary Schools

The goal of this programme is to reduce the prevalence of dental caries of primary school children through daily toothbrushing in schools using fluoride toothpaste (Polypaste, imported from Philippines, and tested the fluoride (1,450 ppm) in ACTA Netherlands Germany). Monitoring of DFTB is being conducted by OHP division through monitoring forms and checklists, school visits, teachers' seminars, demonstrations and briefings, and DFTB reports.

**Table 4.3a** Name of schools receiving Polypastes and toothbrushes in Brunei Darussalam

Brunei-Muara Zone-I	Brunei-Muara Zone-IIA	Tutong
SR Dato Ahmad	SR Amar Pahlawan	SR Kiudang
SR Pehin Dato Jamil	SR Anggerek Desa	SR PDN Sengkarai
SR Puser Ulak	SR Berakas Garrison	SR Bakiau
SR Raja Isteri Fatimah	SR DMW Lambak	
SR Sungai Kebun	SR Pulaie	
SR Haji Tarif	SR Pantai Berakas	
SR Pintu Malim	SR Dato Basir	
SR PAP Besar	SR Dato Othman	
SR Dato Godam	SR Dato Marsal	
SR Kg. Bendahara Lama	SR Lambak Kanan Jln 49	
SR Mabohai		
SR Saba Darat		
SR Sungai Siamas		

1 Polypaste bottle can be used for 8 students per year

## 3. Publication and printing of DFTB Guideline Booklet

The OHP division has printed 2,000 DFTB Guideline booklets for the entire primary schools in Brunei-Darussalam.

## 4. Health Promoting school activity (SMK-Sekolah Mempromosi Kesihatan)

A health promoting school is one that constantly strengthens its capacity as a healthy setting for living, learning and working. All children in Brunei Darussalam will be under either primary or secondary school communities which are dedicated to promoting lifelong learning, health and well-being.

**Table 4.3b** Name of schools visited by the Dental Department staff

Name of schools visited	Districts	Government/Private
Chung Ching Middle School (Kindergarden)	Kuala Belait	Private
Chung Ching Primary School	Kuala Belait	Private
Chung Ching Middle School (Secondary)	Kuala Belait	Private
Chung Hua School	Kuala Belait	Private
Sekolah Menengah PerdanaWazir	Kuala Belait	Government
Sekolah Tadika ABC	Kuala Belait	Private
St. Margaret's School	Kuala Belait	Private
Sekolah Bakti Dewa	Tutong	Private
Sekolah Menengah PMM Kuala	Tutong	Government
Sekolah Rendah Tumpuan Telisai	Tutong	Government
Sekolah Rendah Rambai	Tutong	Government
Sekolah Cemerlang Abejess	Brunei-Muara	Private
Sekolah Menengah Lambak Kiri	Brunei-Muara	Government
Sekolah Menengah Rimba	Brunei-Muara	Government
Sekolah Menengah RIPAS	Brunei-Muara	Government
SOAS College	Brunei-Muara	Government
Sekolah Rendah Panglima Barudin, Limau Manis	Brunei-Muara	Government
Al Falah School	Brunei-Muara	Private
AHMY Katimahar	Brunei-Muara	Government
Syamde Bright Kids	Brunei-Muara	Private

### 5. Toddlers, Fluoride Varnish and Rolling Toothpaste Programme (TFRTP)

This is an ‘early childhood oral health care programme’. Their main objective is to promote and maintain good oral health of toddlers, which can contribute to optimum growth and development. It targets post natal mothers and parents/carers of children under 5 years and below who are seen by the OHP staff under the Dental Services in Maternity and Child Health centres. This is a 3-in-1 programme which includes:-

1. Education- Toddlers programme - oral health counselling session for parents and children under 5 years old where breastfeeding is strongly encouraged instead of bottlefeeding. If the child is bottle feeding to strongly encourage weaning off to using a feeder cup at 1 year old onwards.
2. Clinical Intervention- Fluoride varnish applications to all dentate children at 6 months intervals until 5 years old for caries prevention.
3. Oral Health Promotion Intervention- The **Rolling Toothpaste Programme** is an interventive oral health promotion programme involving a complimentary bag containing a fluoridated toothpaste, toothbrush, leaflets, and a feeder cup being given as an incentive to parents of 9 months old babies to replace bottle feeding with feeder cups, at 1 year of age onwards and to encourage mothers/parents/caregivers to brush their children's teeth. A toothbrush and toothpaste are given to the child every 6 months until the child is 5 years old.

This programme is now extended to all Maternity and Child Health clinics/centre's in Brunei-Muara and Tutong district, and will be extended to Kuala Belait and Temburong from 2013 onwards.

## **6. Release of Oral Health Promotion booklet**

Topics included were:

- i. Bottle feeding and Breast feeding.
- ii. Diet – eating fresh and balanced diet.
- iii. Oral health care.
- iv. Prevention of cross infection.
- v. Importance of fluoride toothpaste (1,100-1,450ppm).
- vi. Toothbrushing and flossing technique for adults.
- vii. How parents can examine their child's teeth.
- viii. Healthy teeth for life.

## **7. Oral Health Education Talks in Kindergarten, Primary and Secondary schools, Religious schools, Private schools and to Public**

Oral health education aims to improve health by changing behaviour through information on oral health.

**Table 4.3c** Number of Oral Health education talks in schools

<b>Primary schools</b>	<b>Secondary schools</b>	<b>Religious schools</b>	<b>Private schools</b>	<b>Public</b>
16	1	2	7	13

## **8. National dental song competition in primary schools in Brunei Darussalam**

A national dental song competition was conducted as part of the World Oral Health Day Celebration in April 2012. This competition was for all primary government and private school children at the age of 6-9 years old (Year 1-3). The lyrics were about oral health which include advice, knowledge and habits for good oral health. The purpose was to utilise songs to instil/influence/impact young children towards good oral health through imparting oral health knowledge through effective “catchy” children dental songs. A total number of 49 schools participated in the semi-finals in 2011 which was conducted in International Convention Centre; Out of this, 10 schools qualified for the finals. The final competition was held at Radio Televisyen Brunei (RTB) on 14<sup>th</sup> April 2012. The Minister of Health, Yang Berhormat

Pehin Orang Kaya Johan Pahlawan Dato Seri Setia Awang Haji Adnan bin Begawan Pehin Siraja Khatib Dato Seri Setia Awang Haji Mohd Yusof, was the Guest of Honour and inaugurated the function.

## 9. Oral Health Promotion Promos

Oral Health Promotion Promos with the main messages of i. Encouraging breastfeeding, ii. Stopping bottle feeding, iii. Discouraging sweet snacking, and iv. Toothbrushing has continued to be aired in the television by RTB throughout the year.

## 10. Water Fluoridation

The first water fluoridation plant was installed in the Layong water treatment plant at Tutong district in 1987. Since then, 3 more water fluoridation plants have been commissioned throughout the country.

**Table 4.3d** Water fluoridation plant in Brunei

Fluoridation plants	Year of commencement	Area supplied
Layong	1987	Most of Tutong district up to Jln Jerudong, Brunei-Muara district
Bukit Barun	1996	Most of Brunei-Muara district
Seria	2000	Most of Kuala Belait district except Labi
Mengkabau	2000	The whole of Muara area up to Kg. Kapok Kanan in Kota Batu area
Temburong (Sumbiling I & II)	2008	The whole of Temburong district

About 95% of the population receives fluoridated water. All the water samples from these plants are monitored by Ministry of Health and Public Works Department. The levels of fluoride in the water in Brunei are seen from the Table 4.3e. The scientific lab under Ministry of Health was not functioning and Oral Health Promotion department have results only from Public Works Department.



**Table 4.3e** Split water sample annual report [Fluoride level (mg/l)] (2012)

Name of End Point/Water Work	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
SG ASAM DC (BUKIT BARUN)													
JKR	-	-	0.66	0.57	0.70	-	0.70	-	0.68	JKR lab moved to new building			0.66ppm
MUARA DC (MENGKABAU)													
JKR	-	-	0.63	0.74	0.63	-	0.49	-	-	JKR lab moved to new building			0.62ppm
TUTONG HOSPITAL/LAYONG													
JKR	-	-	0.61	0.54	0.64	-	0.60	-	0.51	JKR lab moved to new building			0.58ppm
SERIA DC													
JKR	-	-	-	-	0.50	-	-	-	-	JKR lab moved to new building			0.50ppm

\*MOH Scientific Lab – Fluoride Analysing machine not functioning.

\*\*Seria DC- Sample not received regularly due to shortage of staff.

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