

Australian Orthopaedic Association National Joint Replacement Registry

Demographics of Spinal Disc
Arthroplasty Supplementary Report



AOA
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Australian
Orthopaedic
Association
National
Joint
Replacement
Registry

Director: Professor Stephen Graves
E: admin@aoanjrr.org.au

Manager: Ms Kathy Hill
E: khill@aoanjrr.org.au

AOANJRR
SAHMRI,
North Terrace
ADELAIDE SA 5000
T: +61 8 8128 4280

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**2022 Demographics of Spinal Disc
Arthroplasty
Supplementary Report**

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The Registry greatly appreciates the participation of all joint replacement patients throughout Australia. Their contribution allows ongoing improvements in arthroplasty outcomes to be achieved.

AOA Registry Clinical Director

Professor Stephen Graves

Deputy Clinical Directors

Professor Richard de Steiger

Mr Peter Lewis

Professor Ian Harris

Assistant Deputy Clinical Director

Mr James D Stoney

Clinical Advisors

Professor Richard Page

Mr Peter Stavrou

PROMs Advisor

Professor Ilana Ackerman

AOA Registry Committee

Neil Bergman

Annette Holian

Chris Morrey

Stephen Graves

Richard de Steiger

Peter Lewis

James Stoney

Bill Walter

Richard Page

Peter Stavrou

Rob Kuru

Peter McEwen

Paul Smith

Michael Schuetz

Joshua Petterwood

David Wysoki

Committee Chair

AOA President

AOA Vice President

Director

Deputy Director (Victoria)

Deputy Director (South Australia)

Assistant Deputy Director

Arthroplasty Society of Australia

Shoulder & Elbow Society

Foot & Ankle Society

Spine Society

Knee Society

Australian Capital Territory

Queensland

Tasmania

Western Australia

AOA NATIONAL JOINT REPLACEMENT REGISTRY

Registry Executive Manager

Kathy Hill

Clinical Studies Manager

Durga Bastiras

PROMs Manager

Pablo Flores Figuera

Publications Manager

Sophie Corfield

Administrative Coordinator

Rianne Thompson

Clinical Studies Team

Tania Alland

Libby Poole

Dianne Buranyi-Trevarton

Laura Busk

PROMs Team

Nea Ryan

David Metherell

Marta Jasinska

Data Linkage

Katherine Duszynski

(UNISA)

SOUTH AUSTRALIAN HEALTH AND MEDICAL RESEARCH INSTITUTE (SAHMRI)

Project Manager

Emma Heath

Statisticians

Michelle Lorimer

Alana Cuthbert

Carl Holder

Dylan Harries

Kara Cashman

Data Entry

Georgina Daynes

Kirsty Modystach

Anh Pham

Jacinta Greer

Anna Fergusson

Vivien Do

Jeremy Durward

Michael Crame

Andrew Loakim

Anita Wright

Courtney Cullen

Natalie Morrall

ICT

Andrew Brock

Christian Boyd

Jennifer Coleman

Nazia Dilnaz

Daina Ross

Vincent Talladira

Anu Bakshi

Peter Weston

Data Managers

Janey Barrow

Robert Armitage

Primali De Silva

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Introduction

The 2022 Demographics of Spinal Disc Arthroplasty Supplementary Report is based on the analysis of 10,196 spinal disc procedures recorded by the Registry with a procedure date up to and including 31 December 2021.

This supplementary report provides summary data and demographic information on spinal disc replacement surgery.

Data are broken down into the five classes of spinal disc replacement: spinal segment, spinal ball trough, insert and endplate, cervical intervertebral disc and lumbar intervertebral disc. Revision rates are not provided for spinal disc replacement.

The Spinal Disc Arthroplasty Report is one of 15 supplementary reports to complete the AOANJRR Annual Report for 2022.

Information on the background, purpose, aims, benefits and governance of the Registry can be found on the Introductory chapter of the 2022 Hip, Knee & Shoulder Arthroplasty Annual Report.

The Registry data quality processes including data collection, validation and outcome assessment, are provided in detail in the Data Quality chapter of the 2022 Hip, Knee & Shoulder Arthroplasty Annual Report: <https://aoanjrr.sahmri.com/annual-reports-2022>

Spinal Disc Replacement

Demographics of Spinal Disc Replacement

Table SD1 Number of Primary Spinal Disc Replacements by Gender

Spinal Disc Replacement	Male		Female		TOTAL	
	N	Total%	N	Total%	N	Total%
Spinal Segment	193	1.9	159	1.6	352	3.5
Spinal Ball Trough	1229	12.1	1187	11.6	2416	23.7
Insert & Endplates	239	2.3	143	1.4	382	3.7
Intervertebral Disc (Cervical)	2293	22.5	1921	18.8	4214	41.3
Intervertebral Disc (Lumbar)	1736	17.0	1096	10.7	2832	27.8
TOTAL	5690	55.8	4506	44.2	10196	100.0

Table SD2 Number of Primary Spinal Disc Replacements by Age

Spinal Disc Replacement	<55		55-64		65-74		75-84		≥85		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%
Spinal Segment	313	3.1	25	0.2	13	0.1	1	0.0	.	.	352	3.5
Spinal Ball Trough	1950	19.1	342	3.4	108	1.1	14	0.1	2	0.0	2416	23.7
Insert & Endplates	354	3.5	24	0.2	3	0.0	1	0.0	.	.	382	3.7
Intervertebral Disc (Cervical)	3392	33.3	667	6.5	145	1.4	10	0.1	.	.	4214	41.3
Intervertebral Disc (Lumbar)	2190	21.5	416	4.1	189	1.9	36	0.4	1	0.0	2832	27.8
TOTAL	8199	80.4	1474	14.5	458	4.5	62	0.6	3	0.0	10196	100.0

Table SD3 Number of Primary Spinal Disc Replacements by Year of Implant

Year of Implant	Spinal Segment		Spinal Ball Trough		Insert & Endplates		Intervertebral Disc (Cervical)		Intervertebral Disc (Lumbar)		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%
2007	1	0.0	4	0.0	1	0.0	.	.	1	0.0	7	0.1
2008	39	0.4	40	0.4	23	0.2	2	0.0	11	0.1	115	1.1
2009	36	0.4	31	0.3	27	0.3	3	0.0	4	0.0	101	1.0
2010	57	0.6	15	0.1	32	0.3	23	0.2	14	0.1	141	1.4
2011	51	0.5	14	0.1	30	0.3	33	0.3	14	0.1	142	1.4
2012	26	0.3	7	0.1	22	0.2	64	0.6	36	0.4	155	1.5
2013	30	0.3	116	1.1	44	0.4	139	1.4	52	0.5	381	3.7
2014	30	0.3	192	1.9	33	0.3	301	3.0	89	0.9	645	6.3
2015	18	0.2	257	2.5	25	0.2	402	3.9	265	2.6	967	9.5
2016	24	0.2	264	2.6	24	0.2	314	3.1	316	3.1	942	9.2
2017	21	0.2	338	3.3	21	0.2	514	5.0	415	4.1	1309	12.8
2018	13	0.1	384	3.8	22	0.2	556	5.5	381	3.7	1356	13.3
2019	4	0.0	297	2.9	25	0.2	683	6.7	458	4.5	1467	14.4
2020	.	.	270	2.6	32	0.3	582	5.7	428	4.2	1312	12.9
2021	2	0.0	187	1.8	21	0.2	598	5.9	348	3.4	1156	11.3
TOTAL	352	3.5	2416	23.7	382	3.7	4214	41.3	2832	27.8	10196	100.0

Table SD4 Number of Primary Spinal Disc Replacements by Level

Spinal Disk Replacement	Spinal Segment		Spinal Ball Trough		Insert & Endplates		Intervertebral Disc (Cervical)		Intervertebral Disc (Lumbar)		TOTAL	
	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%	N	Total%
T12-L1	.	.	1	0.0	1	0.0	.	.	.	.	2	0.0
L1-L2	1	0.0	3	0.0	.	.	.	.	7	0.1	11	0.1
L2-L3	9	0.1	.	.	5	0.0	.	.	137	1.3	151	1.5
L3-L4	46	0.5	8	0.1	44	0.4	.	.	458	4.5	556	5.5
L4-L5	227	2.2	15	0.1	205	2.0	.	.	1539	15.1	1986	19.5
L5-S1	64	0.6	5	0.0	117	1.1	.	.	691	6.8	877	8.6
C2-C3	.	.	7	0.1	.	.	2	0.0	.	.	9	0.1
C3-C4	.	.	124	1.2	1	0.0	104	1.0	.	.	229	2.2
C4-C5	1	0.0	422	4.1	3	0.0	503	4.9	.	.	929	9.1
C5-C6	4	0.0	1101	10.8	3	0.0	1972	19.3	.	.	3080	30.2
C6-C7	.	.	716	7.0	3	0.0	1585	15.5	.	.	2304	22.6
C7-T1	.	.	14	0.1	.	.	48	0.5	.	.	62	0.6
TOTAL	352	3.5	2416	23.7	382	3.7	4214	41.3	2832	27.8	10196	100.0

Primary Spinal Disc Replacement

Table SD5 Age and Gender of Primary Spinal Disc Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	4506	44.2%	15	87	45	45.5	10.6
Male	5690	55.8%	17	99	45	45.6	11.0
TOTAL	10196	100.0%	15	99	45	45.6	10.8

Figure SD1 Primary Spinal Disc Replacement by Age and Gender

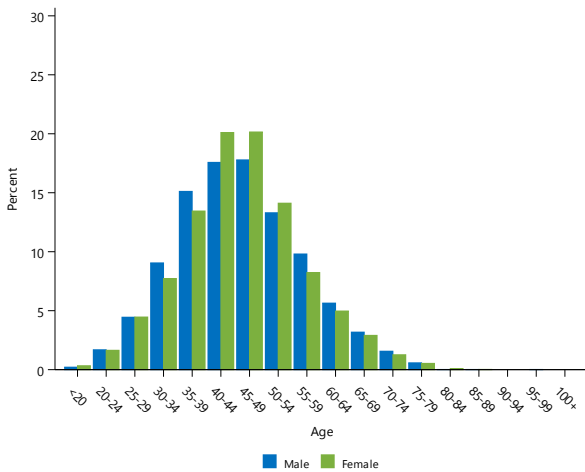


Table SD6 Primary Spinal Disc Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	8951	87.8
Disc Disease Without Radiculopathy	870	8.5
Pain Of Unknown Cause	118	1.2
Spondylolisthesis	87	0.9
Adjacent To Concurrent Fusion	76	0.7
Adjacent Segment Syndrome	30	0.3
Post Laminectomy Or Discectomy	28	0.3
Other	36	0.4
TOTAL	10196	100.0

Primary Spinal Segment Replacement

Table SD7 Age and Gender of Primary Spinal Segment Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	159	45.2%	19	73	40	40.3	10.7
Male	193	54.8%	19	75	40	41.5	11.0
TOTAL	352	100.0%	19	75	40	41.0	10.9

Figure SD2 Primary Spinal Segment Replacement by Age and Gender

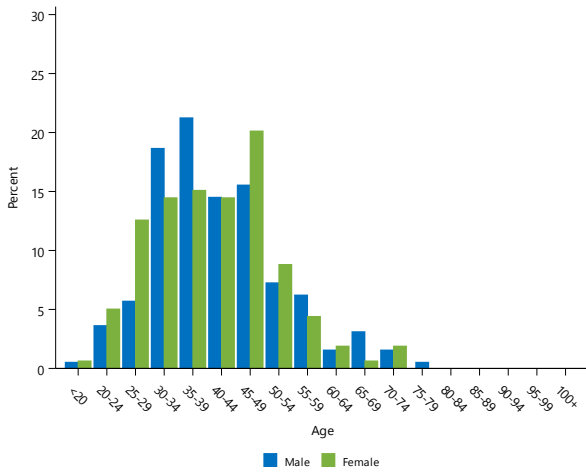


Table SD8 Primary Spinal Segment Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease Without Radiculopathy	183	52.0
Disc Disease With Radiculopathy	144	40.9
Adjacent To Concurrent Fusion	8	2.3
Pain Of Unknown Cause	7	2.0
Spondylolisthesis	5	1.4
Post Laminectomy Or Discectomy	1	0.3
Adjacent Segment Syndrome	1	0.3
Other	3	0.9
TOTAL	352	100.0

Table SD9 Most Used Segment Prostheses in Primary Spinal Segment Replacement

2008		2016		2017		2018		2019	
N	Model	N	Model	N	Model	N	Model	N	Model
39	Maverick	18	TDR	21	TDR	12	TDR	2	TDR
		6	Maverick			1	Verte-Stack	2	Verte-Stack
Most Used									
39	(1) 100.0	24	(2) 100.0	21	(1) 100.0	13	(2) 100.0	4	(2) 100.0

Primary Spinal Ball Trough Replacement

Table SD10 Age and Gender of Primary Spinal Ball Trough Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1187	49.1%	22	81	46	46.2	9.6
Male	1229	50.9%	21	99	46	46.5	10.6
TOTAL	2416	100.0%	21	99	46	46.4	10.1

Figure SD3 Primary Spinal Ball Trough Replacement by Age and Gender

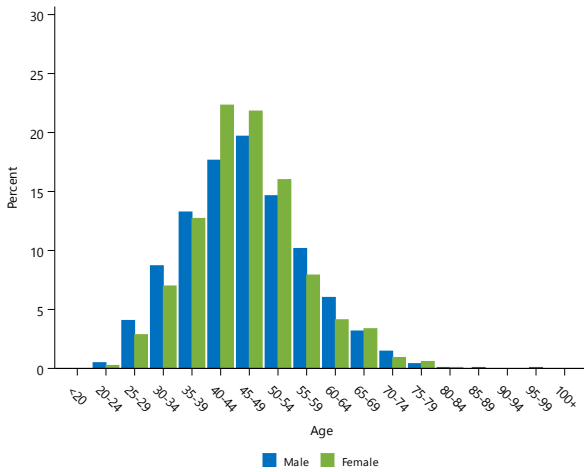


Table SD11 Primary Spinal Ball Trough Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	2211	91.5
Disc Disease Without Radiculopathy	118	4.9
Spondylolisthesis	24	1.0
Pain Of Unknown Cause	17	0.7
Adjacent Segment Syndrome	14	0.6
Adjacent To Concurrent Fusion	12	0.5
Post Laminectomy Or Discectomy	11	0.5
Other	9	0.4
TOTAL	2416	100.0

Table SD12 Most Used Ball Trough Prostheses in Primary Spinal Ball Trough Replacement

2008		2018		2019		2020		2021		
N	Model	N	Model	N	N	Model	N	Model	N	
30	Prestige	175	Mobi-C	133	Prodisc-C	146	Prodisc-C	99	Prodisc-C	
4	Wallis	140	Prodisc-C	120	Mobi-C	75	Mobi-C	63	Mobi-C	
3	Prodisc-C	50	Prestige	38	Prestige	32	Prestige	25	Prestige	
3	X-Stop	13	Bryan	6	Activ C	15	Activ C			
		5	Activ C			2	Secure-C			
		1	Secure-C							
Most Used										
40	(4) 100	384	(6) 100	297	(4) 100	270	(5) 100	187	(3) 100	

Primary Spinal Insert/Endplate Replacement

Table SD13 Age and Gender of Primary Spinal Insert/Endplate Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	143	37.4%	20	69	40	40.2	9.7
Male	239	62.6%	20	77	41	40.7	9.8
TOTAL	382	100.0%	20	77	41	40.5	9.8

Figure SD4 Primary Spinal Insert/Endplate Replacement by Age and Gender

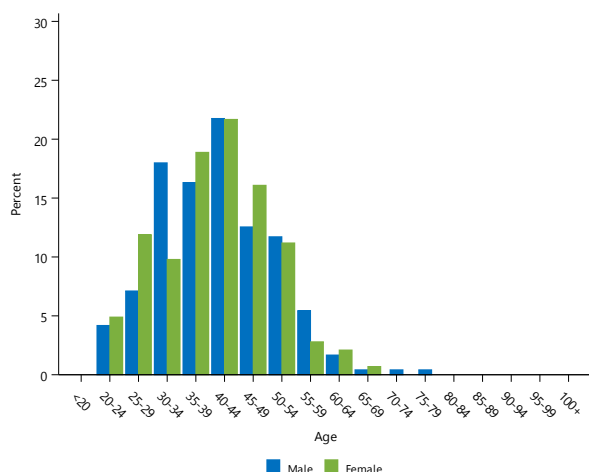


Table SD14 Primary Spinal Insert/Endplate Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	238	62.3
Disc Disease Without Radiculopathy	88	23.0
Pain Of Unknown Cause	35	9.2
Spondylolisthesis	10	2.6
Adjacent To Concurrent Fusion	6	1.6
Adjacent Segment Syndrome	2	0.5
Post Laminectomy Or Discectomy	1	0.3
Other	2	0.5
TOTAL	382	100.0

Table SD15 Most Used Insert Prostheses in Primary Spinal Insert/Endplate Replacement

2008		2018		2019		2020		2021		
N	Model	N	Model	N	N	Model	N	Model	N	
16	Prodisc	19	Activ L	19	Activ L	30	Activ L	17	Activ L	
7	In Motion	2	Secure-C	6	Prodisc	1	Orbit-R	4	Prodisc	
		1	Prodisc			1	Prodisc			
10 Most Used										
23	(2) 100	22	(3) 100	25	(2) 100	32	(3) 100	21	(2) 100	



Primary Cervical Intervertebral Disc Replacement

Table SD16 Age and Gender of Primary Cervical Intervertebral Disc Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1921	45.6%	15	78	46	46.4	9.4
Male	2293	54.4%	19	78	46	46.3	9.9
TOTAL	4214	100.0%	15	78	46	46.3	9.7

Figure SD5 Primary Cervical Intervertebral Disc Replacement by Age and Gender

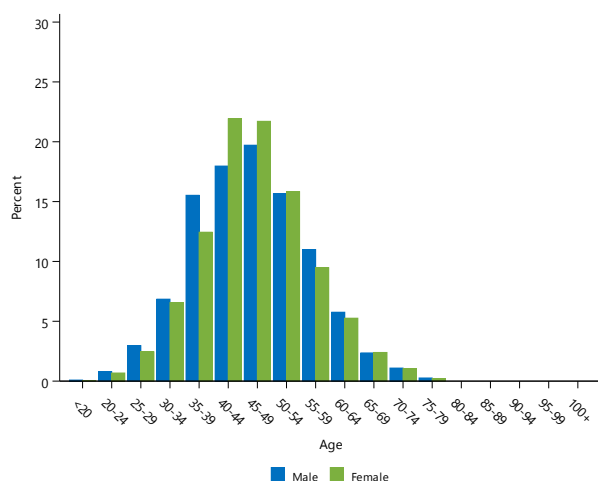


Table SD17 Primary Cervical Intervertebral Disc Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	3921	93.0
Disc Disease Without Radiculopathy	172	4.1
Pain Of Unknown Cause	32	0.8
Spondylolisthesis	30	0.7
Adjacent To Concurrent Fusion	22	0.5
Post Laminectomy Or Discectomy	12	0.3
Adjacent Segment Syndrome	9	0.2
Other	16	0.4
TOTAL	4214	100.0

Table SD18 Most Used Disc Prostheses in Primary Cervical Intervertebral Disc Replacement

2008		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
2	Spinal Disc (DePuy)	452	M6	461	M6	359	M6	351	M6
		56	CP-ESP	120	Synergy Disc	108	CP-ESP	126	CP-ESP
		47	Synergy Disc	102	CP-ESP	101	Synergy Disc	108	Synergy Disc
		1	Baguera			13	Baguera	13	Baguera
10 Most Used									
2	(1) 100.0%	556	(4) 100.0%	683	(3) 100.0%	581	(4) 100.0%	598	(4) 100.0%

Primary Lumbar Intervertebral Disc Replacement

Table SD19 Primary Lumbar Intervertebral Disc Replacement by Age and Gender

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Female	1096	38.7%	16	87	44	44.5	12.9
Male	1736	61.3%	17	79	44	45.3	12.5
TOTAL	2832	100.0%	16	87	44	45.0	12.6

Figure SD6 Primary Lumbar Intervertebral Disc Replacement by Age and Gender

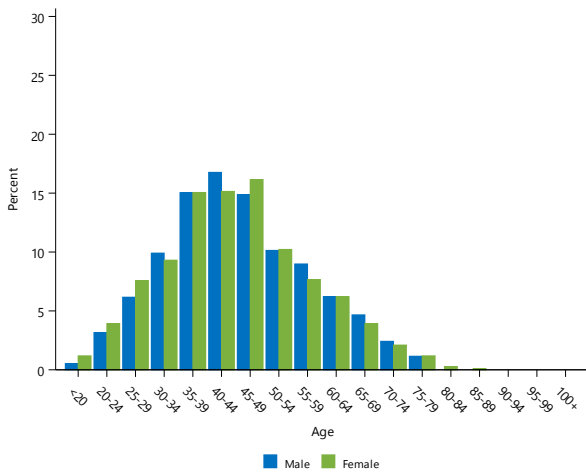


Table SD20 Primary Lumbar Intervertebral Disc Replacement by Primary Diagnosis

Primary Diagnosis	Number	Percent
Disc Disease With Radiculopathy	2437	86.1
Disc Disease Without Radiculopathy	309	10.9
Adjacent To Concurrent Fusion	28	1.0
Pain Of Unknown Cause	27	1.0
Spondylolisthesis	18	0.6
Adjacent Segment Syndrome	4	0.1
Post Laminectomy Or Discectomy	3	0.1
Other	6	0.2
TOTAL	2832	100.0

Table SD21 Most Used Disc Prostheses in Primary Lumbar Intervertebral Disc Replacement

2008		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
11	Flexicore	305	LP-ESP	361	LP-ESP	350	LP-ESP	271	LP-ESP
		76	M6	97	M6	78	M6	76	M6
								1	Baguera
MOST USED									
11	(1) 100.0%	381	(2) 100.0%	458	(2) 100.0%	428	(2) 100.0%	348	(3) 100.0%

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