



## **Supporting Information**

### **Supplementary methods and results**

**This appendix was part of the submitted manuscript and has been peer reviewed.  
It is posted as supplied by the authors.**

Appendix to: Wilson L, Copp T, Hickey M, et al. Women who experience heavy menstrual bleeding: prevalence and characteristics from young adulthood to midlife, Australia, 2000–2021: a longitudinal cohort survey study. *Med J Aust* 2025; doi: 10.5694/mja2.52596.

## Supporting methods

### 1. Reproduction-related characteristics

#### Ascertainment of levonorgestrel-releasing intrauterine device (IUD) use

Data from the Pharmaceutical Benefits Scheme (PBS) and Medicare Benefits Schedule (MBS) was used to ascertain use of a levonorgestrel-releasing IUD using the following codes:

	Name/Description
<b>PBS Codes</b>	
8633J*	IUD Levonorgestrel (proprietary name: Mirena)
11909T†	IUD Levonorgestrel (proprietary name: Kyleena)
<b>MBS Code</b>	
35503	Introduction of an intra-uterine device for abnormal uterine bleeding or contraception or for endometrial protection during oestrogen replacement therapy (from 1991 to present)

\* Mirena was first listed on the PBS on 1 February 2003 for contraceptive use only. On 1 August 2007 this was extended to include women in whom oral therapies for idiopathic menorrhagia are ineffective or contraindicated.

† Kyleena was first listed on the PBS on 1 March 2020 for contraception

The recorded date of supply was used as a proxy for the date the IUD was inserted. We assumed that IUD use was for five years, although this may overestimate the mean duration of use. If a survey was returned within this five-year time period, participants were considered to be using an IUD at these surveys.

#### Ascertainment of etonogestrel implant use

The PBS code 8487Q (etonogestrel – implant; proprietary name: Implanon) was used to ascertain use of a progestogen implant. The recorded date of supply was used as a proxy for the date the implant was inserted. We assumed that an implant lasted for three years, although this may overestimate mean duration of use. If a survey was returned within this three-year time period, participants were considered to be using an implant at these surveys.

#### Ascertainment of hysterectomy and bilateral oophorectomy

From survey 4 onwards, participants were asked whether they had a hysterectomy. From survey 5 onwards, women were also asked whether they had both ovaries removed (bilateral oophorectomy). Women were considered to have had a hysterectomy or bilateral oophorectomy if they responded ‘yes’ to either of these questions.

#### Ascertainment of menopause

If a woman had not reported that she had had a hysterectomy or a bilateral oophorectomy, menopause status was determined from responses to questions about menstrual pattern and pregnancy status, contraceptive use, and hormone therapy use.

At surveys 7, 8 and 9 participants were asked if they had a period or menstrual bleeding in the preceding twelve months. Questions about hormone therapy use were first asked at survey 8 (2018; age 40-45 years).

Classification by menopausal status was as follows:

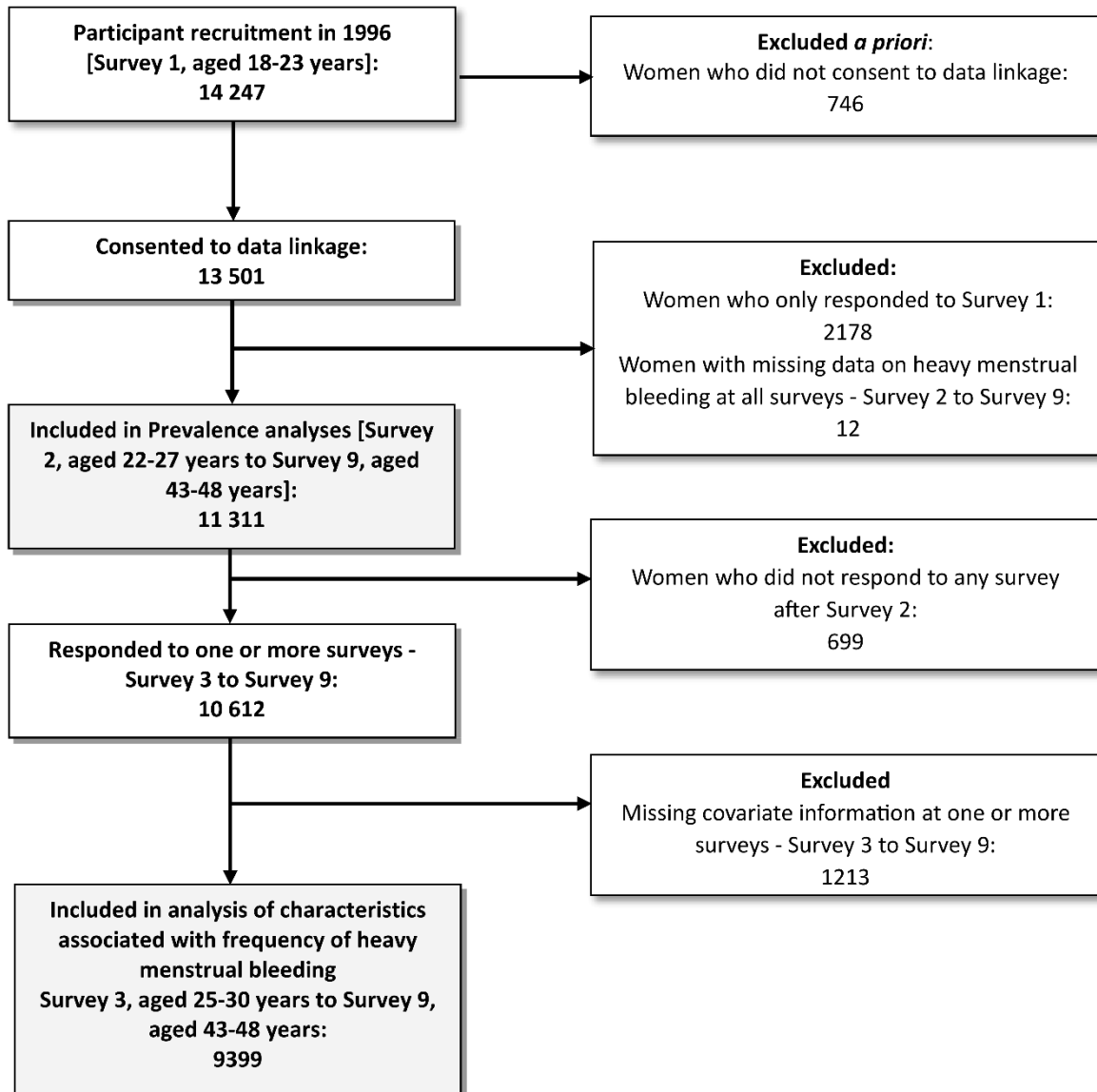
- If a woman responded that she had had a period or menstrual bleeding in the preceding twelve months, she was classified as not having gone through menopause:
  - if a woman reported she was pregnant, she was classified as not having gone through menopause.
- If a woman reported she was using a form of hormonal contraception (including a levonorgestrel-releasing IUD), her menopause status was classified as unknown because of hormonal contraception use.

- If a woman reported hormone therapy use and had not reported amenorrhoea for more than twelve months in an earlier survey, her menopause status was classified as unknown because of hormone therapy use.
- If a woman was not included in any of the above categories and reported amenorrhoea lasting at least twelve months, she was classified as having experienced menopause.

For example, if a woman had reported she was still menstruating at survey 7 and reported hormone therapy use at survey 8, her menopause status was classified as unknown. If a woman reported she had not menstruated during the preceding twelve months at survey 7 and reported she was using hormone therapy in survey 8, she was classified as having experienced menopause.

<b>Menopause status</b>	<b>Survey 7 (2015, 37-42 years)</b>	<b>Survey 8 (2018, 40-45 years)</b>	<b>Survey 9 (2021, 43-48 years)</b>
Has not experienced menopause	4468 (63.3%)	1474 (59.7%)	3762 (55.5%)
Has experienced menopause	141 (2.0%)	314 (4.5%)	522 (7.7%)
Hysterectomy and/or bilateral oophorectomy	237 (3.3%)	286 (5.5%)	551 (8.1%)
Unknown menopause status due to hormonal contraception use	2219 (31.4%)	2067 (29.7%)	1853 (27.3%)
Unknown menopause status due to hormone therapy use	0 (0.0%)	45 (0.6%)	98 (1.4%)

**Figure 1. Flow chart of participants from the 1973–1978 cohort of the Australian Longitudinal Study on Women’s Health included in the analysis of associations between socio-demographic, behaviour, and health factors and self-reported experience of heavy menstrual bleeding**



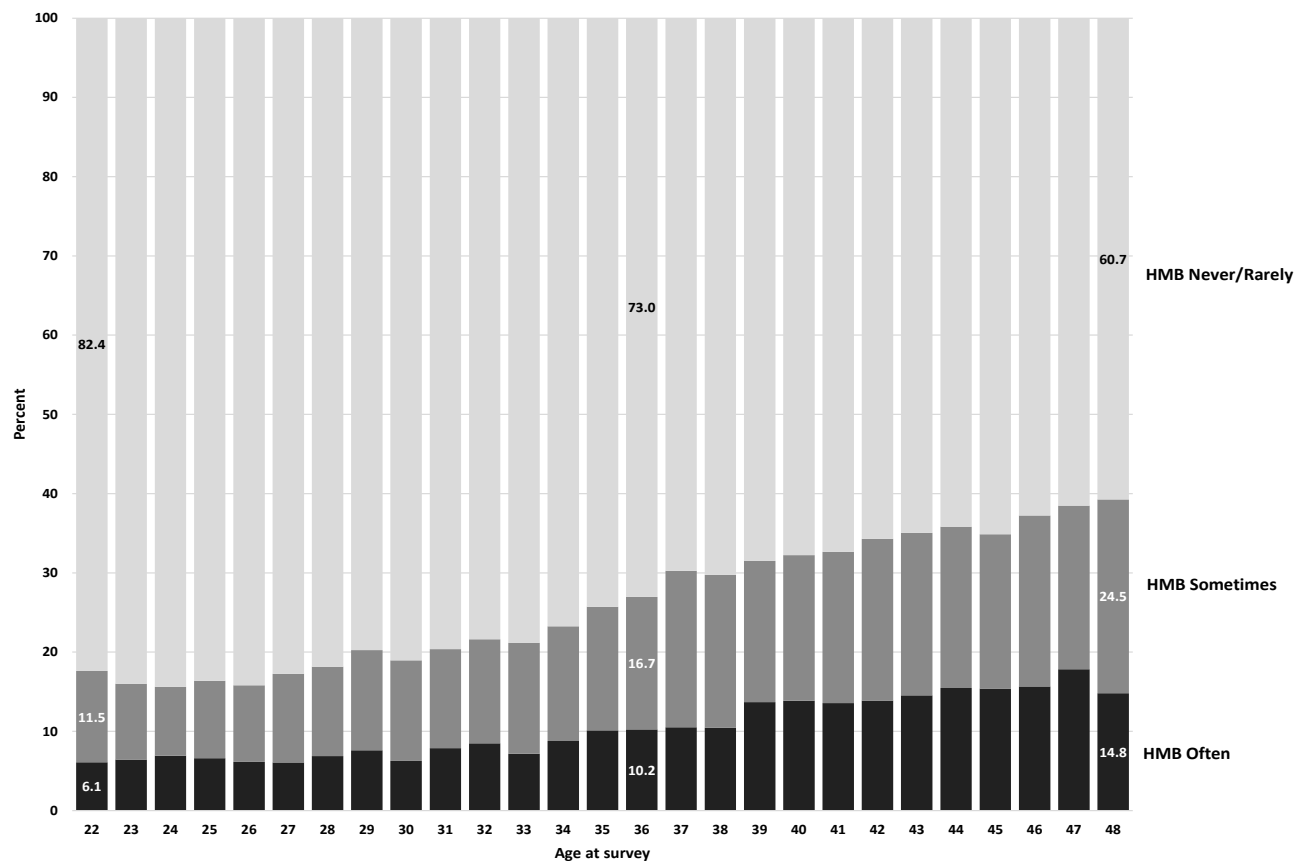
**Table 1. Respondents who reported experiencing heavy menstrual bleeding (never or rarely, sometimes, or often), having had hysterectomies or bilateral oophorectomies, or having experienced menopause, by year of age at survey**

Age (years)	Heavy menstrual bleeding						Hysterectomy/ bilateral oophorectomy		Menopause	
	Never/rarely		Sometimes		Often		Number	Weighted proportion*	Number	Weighted proportion*
	Number	Weighted proportion*	Number	Weighted proportion*	Number	Weighted proportion*				
22	567	82.4%	79	11.5%	45	6.1%	0	0	0	0
23	1520	84.0%	171	9.6%	118	6.4%	0	0	0	0
24	1543	84.4%	157	8.7%	119	6.9%	0	0	0	0
25	2026	83.6%	244	9.8%	165	6.6%	0	0	0	0
26	2915	84.2%	338	9.7%	227	6.2%	0	0	0	0
27	2360	82.8%	311	11.2%	182	6.1%	0	0	0	0
28	1926	81.8%	272	11.3%	167	6.9%	n.p.	< 1%	n.p.	< 1%
29	2734	79.7%	443	12.6%	264	7.6%	n.p.	< 1%	n.p.	< 1%
30	2204	81.0%	341	12.7%	187	6.3%	n.p.	< 1%	n.p.	< 1%
31	1675	79.1%	277	12.4%	175	7.8%	n.p.	< 1%	n.p.	< 1%
32	2435	78.0%	436	13.1%	263	8.4%	n.p.	< 1%	n.p.	< 1%
33	1958	78.5%	361	14.0%	189	7.1%	n.p.	< 1%	n.p.	< 1%
34	1484	76.4%	273	14.4%	172	8.7%	n.p.	< 1%	n.p.	< 1%
35	2164	73.5%	459	15.4%	310	10.0%	n.p.	< 1%	n.p.	< 1%
36	1782	72.5%	404	16.6%	254	10.2%	n.p.	< 1%	n.p.	< 1%
37	1396	68.3%	390	19.3%	216	10.3%	33	1.5%	11	0.5%
38	1879	68.3%	515	18.8%	291	10.2%	60	2.1%	19	0.6%
39	1618	66.1%	420	17.2%	307	13.2%	63	2.4%	23	1.0%
40	1058	64.9%	293	17.6%	220	13.3%	42	2.5%	29	1.7%
41	1581	63.6%	445	18.0%	311	12.8%	92	3.4%	52	2.2%
42	1331	61.0%	411	18.9%	274	12.9%	106	4.3%	64	2.9%
43	950	59.3%	297	18.7%	218	13.3%	68	4.3%	76	4.5%
44	1353	57.9%	455	18.4%	325	13.9%	142	5.6%	95	4.2%
45	1310	57.4%	402	17.2%	305	13.6%	168	6.9%	116	5.0%
46	772	54.8%	263	18.8%	193	13.7%	101	7.0%	85	5.6%
47	662	51.8%	220	17.4%	194	15.0%	113	7.9%	96	7.9%
48	554	49.7%	223	20.0%	136	12.1%	112	8.6%	107	9.6%

n.p. = not published (small numbers).

\* As proportions are weighted for residential remoteness to adjust for oversampling in rural and remote areas, they cannot be directly calculated from raw numbers

**Figure 2. Proportions of respondents who reported experiencing heavy menstrual bleeding (HMB) during the preceding twelve months, by year of age at survey, excluding women who reported having had hysterectomies or bilateral oophorectomies or having experienced menopause from the age at which they reported this event**



**Table 2. Women in the 1973-1978 cohort of the Australian Longitudinal Study on Women's Health who reported using hormonal contraception, by type and survey (2000 to 2021)**

Survey (year, age range)	Respondents	Levonorgestrel-releasing intrauterine device		Etonogestrel implant		Other hormonal contraception*	
		Number	Proportion	Number	Proportion	Number	Proportion
2 (2000, 22-27 years)	9124	24	0.3%	0	0	5069	55.6%
3 (2003, 25-30 years)	8562	38	0.4%	229	2.7%	4040	47.2%
4 (2006, 28-33 years)	8574	245	2.9%	405	4.7%	3146	36.7%
5 (2009, 31-36 years)	7606	558	7.3%	298	3.9%	2062	27.1%
6 (2012, 34-39 years)	7508	859	11.4%	256	3.4%	1728	23.0%
7 (2015, 37-42 years)	6800	1079	15.9%	222	3.3%	1154	17.0%
8 (2018, 40-45 years)	6770	1259	18.6%	219	3.2%	866	12.8%
9 (2021, 43-48 years)	6547	1271	19.4%	161	2.5%	621	9.5%

\* Survey questions asked about the use of oral contraceptives (combined or progestogen only), injection (e.g., Depo-Provera), vaginal ring (e.g. Nuvaring). These types of hormonal contraceptives were combined as questions about contraception use differed across surveys.