Title

Effects of Covid-19 on contraceptive prescribing in Scottish General Practices.

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Short Title

Covid-19 and contraception in Scotland.

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Keywords

Covid-19, contraception, general practice, GP, lockdown, SARS-CoV-2.

# Word count

# Abstract

# Lay summary

# Graphical abstract

# Introduction

Walker (2022) revealed changes in prescribing of contraception in English general practices between 2019 and 2020 due to the SARS-CoV-2 pandemic, and associated restrictions. Here it will be examined if this is the case in Scotland as well. This study examines changes in contraception prescribed by general practices in Scotland from October 2015 to January 2023.

One limitation of Walker’s (2022) study is the comparison of just three months of prescribing data in both 2019 and 2020. Here, a much longer timeframe is used; with data from October 2015 to January 2023.

In Scotland, as in the rest of the UK, the majority of healthcare is supplied free at the point of use by the National Health Service. This dataset does not cover private prescriptions, but this is likely to be a small proportion of contraceptive prescriptions in Scotland.

# Materials and methods

This study is a retrospective longitudinal study from October 2015 to January 2023. Data from the Scottish Health and Social Care Open Data repository (https://www.opendata.nhs.scot) was used. This dataset provides an overview of prescriptions dispensed in the community throughout Scotland. The overwhelming majority of these are prescribed in general practices, however some may be from other non-medical primary care prescribers, as well as prescriptions from hospitals dispensed in community pharmacies. The dataset is 100% complete for items dispensed in the community. However, it excludes items dispensed in hospitals, prisons, schools, and private prescriptions as well as prescriptions not presented for dispensing and those items dispensed but not submitted for payment. All data is aggregated and entirely anonymous.

R v4.3.0 (R Core Team, 2021) was used to create a script to access data from the NHS Scotland Open Data API. Initially, the complete dataset is filtered using a SQL query to extract only contraceptive medicines by returning results with truncated BNF item codes beginning 07030\* or 21040\*. Subsequently, these data were categorised by truncated BNF code (Table 1).

Table 1.

|  |  |  |
| --- | --- | --- |
| **Truncated BNF item code** | **Category of contraception** | **Example medicines in this category** |
| 0703022\* | Injections, Implants |  |
| 0703023\* | IUS |  |
| 21040\* | IUD |  |
| 0703050\* | Emergency contraception |  |
| 0703010\* | COCP |  |
| 0703021\* | POP |  |
| 0703010E0BG\* | Patch |  |
| 0703011\* | Ring |  |
| 0703030\* | Jelly |  |

Due to inherent differences in prescribing frequencies between contraceptive methods, a standardised metric *months of contraceptive coverage* was calculated:

*Months of contraceptive coverage = (Quantity of items dispensed / Item pack size) \* Duration of contraception*

For example, an IUD with a five-year lifespan provides 60 months of contraceptive coverage (1/1 \* 60), whereas a six-month prescription of a short-acting COCP provides 6 months of contraceptive coverage (126/21 \* 1) despite 126 items being dispensed.

## Patient and public involvement

There was no public or patient involvement in this study.

# Results

Prescribing of contraceptives decreased.

During the Covid-19 pandemic in Scotland, the relative proportion of contraception requiring skilled medical intervention (e.g. IUD or IUS insertion, implants) or monitoring (e.g. COCP) decreased; conversely, other forms of contraception e.g. patches, and notably the POP increased.

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Description automatically generated

Figure 1. Line graph showing trends.

Additionally, the types of oral contraceptive prescribed changed radically. Pre-Covid-19 the median shows slightly more POPs were dispensed than COCPs. However, during Covid-19, COCP dispensing decreased by approximately 40,000 months of contraception per month in Scotland, and has yet to regain its previous prevalence. Interestingly, the median months of contraception dispensed per month for POPs only increase by around 15,000, resulting in a discrepancy between pre-Covid-19 figures.

# Discussion

## Limitations

This study is aggregated data across Scotland, a mixed effects model using may help to eliminate random effects by HB, GP practice etc; socioeconomic effects.

## Conclusions

# Abbreviations

* EC: Emergency contraception
* LARC: Long-acting reversible contraception
* OC: Oral contraception

# Availability of data and code

Data are freely available from NHS Scotland Open Data repository at [https://www.opendata.nhs.scot/dataset/prescriptions-in-the-community]. The full code used for analysis here is available in the supplementary material, and also on GitHub at.

# Declaration of interest

There are no conflicts of interest that could be perceived as prejudicing the impartiality of the research reported here.

# Funding

This research did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

# Contributions

EJH is the sole author of this research and performed all analysis and drafting of the manuscript.

# Acknowledgements

# References

R Core Team (2021) ‘R: A language and environment for statistical ## computing.’ Vienna, Austria: R Foundation for Statistical Computing. Available at: https://www.R-project.org/.

Walker, S.H. (2022) ‘Effect of the COVID-19 pandemic on contraceptive prescribing in general practice: a retrospective analysis of English prescribing data between 2019 and 2020’, *Contraception and Reproductive Medicine*, 7(1), p. 3. Available at: https://doi.org/10.1186/s40834-022-00169-w.

# Supplementary materials

1 – R script used for analysis.