Reporting Bias in Abortion-Breast Cancer Studies

The most common argument against retrospective studies affirming the abortion-breast cancer link is recall bias: the theory that cases who have breast cancer, will be more likely to report having had abortions than (usually healthy) controls. Neither the 1991 Lindefors Harris study nor the 1996 Rookus study are sufficient evidence for this theory. The results of retrospective or case-control studies must not be dismissed out of hand.

1. 1991 Lindefors Harris Study

The most quoted study[1)] in support of recall bias assesses Swedish data obtained through differently designed two studies: one linked induced abortion and breast cancer records and the other was a case-control study that relied on interviews. The authors compared the interview reports of abortions with the official abortion registry and found disparities, and these disparities are the basis for their argument that controls tend not to report past induced abortions.

However, their findings are an insufficient basis for this conclusion. The interviews referenced were conducted at home. Interviews conducted in participants' homes will not be comparable to those conducted in clinical environments and will be disposed to bias and underreporting (which will not likely differ between cases and controls).

Furthermore, whereas fewer control-procured abortions were reported in the interviews than in the registry, more case-procured abortions were reported in the interviews than in the registry. The authors assume that where the registry has no abortion listed for a woman and she states in her interview that she has procured an abortion, the registry is to be trusted over the woman herself. In their 1994 article, Daling et al.[2)] states that they think it unlikely that women with no induced abortion history would claim to have had an abortion; when they recalculate under this assumption, "the size of the spurious increase in risk that arises from reporting differences between case patients and controls is only 16 [percent]" (compared to Lindefors Harris et al.'s calculated 50 percent spurious increase in risk).

The difference in the percentage of cases and controls underreporting their registered abortions amounts to undisclosed abortions on the part of *two or fewer cases*. (Among cases, the error in the registry is larger than the error introduced by underreporting. See the table below.) Furthermore, when stratified, cases under age 40 are more likely to underreport their registered abortions than controls. Their finding that, overall, more controls underreport their abortions than cases is not robust; this small difference in underreporting is insufficient as a basis for a hypothesis used to undermine all retrospective studies in a body of literature.

Breakdown of Induced Abortions as (un)Registered and (un)Reported in the 1991 Lindefors Harris Study

24 cases had abortion in the registry	26 cases reported abortions in their interview	
5 *did not* disclose registered abortions	19 *did* disclose registered abortions	7 disclosed *unregistered* abortions

24 cases had abortion in the registry	**26 cases reported abortions in their interview**	
59 controls had abortions in the registry	**44 controls reported abortions in their interview**	
16 *did not* disclose registered abortions	43 *did* disclose registered abortions	1 disclosed an *unregistered* abortion

2. 1996 Rookus study

The authors of this study in Holland[3] found that induced abortion has a large, positive, significant influence on breast cancer in the more religious southeastern areas studied and to have no significant influence on breast cancer in the less religious western areas. This study provides indirect evidence that reporting bias affects the results of case-control studies. However, their findings are an insufficient basis for this assertion.

The authors attribute the gap in the risk associated with induced abortion between the more and less religious regions to area religiosity; however, they do not actually collect data on the religiosity of their sample. Additionally, they control (to some extent) for religiosity within their study by controlling for injectable contraceptive use—prohibited by the Roman Catholic Church—and still find an effect for induced abortion.

Recall bias is predicated on the assumption that controls are more likely to obscure induced abortion history than cases, yet 12 percent more controls than cases agreed to participate in the study (the authors state that "[a] small nonresponse study among case subjects suggested that the majority of nonresponders had not been informed of the study by their doctors and thus had not been able to consider participation").

Furthermore, the interviews in this study were conducted in the home. This would bias the study's results, completely apart from differential reporting between cases and controls or religiosity-based underreporting.

The authors did not include controls for all known breast cancer risk factors; hence, there is no need for the assertion of reporting bias as it is put forward but not substantiated by the authors. The differing risk found for induced abortion in the more religious and less religious regions may be due to any number of factors.

[1] Britt-Marie Lindefors Harris, Gunnar Eklund, Hans-Olov Adami, and Olav Meirik, "Response Bias in a Case-control Study: Analysis Utilizing Comparative Data Concerning Legal Abortions from Two Independent Swedish Studies," *American Journal of Epidemiology* 134, no. 9 (1991): 1003-1008.
[2] Janet R. Daling, Kathleen E. Malone, Lynda F. Voigt, Emily White, and Noel S. Weiss, "Risk of Breast Cancer among Young Women: Relationship to Induced Abortions," *Journal of the National Cancer Institute* 86, (1994): 1590.
[3] Matti A. Rookus, Flora E. van Leeuwen, "Induced Abortion and Risk for Breast Cancer: Reporting (Recall) Bias in a Dutch Case-Control Study," *Journal of the National Cancer Institute* 88, no. 23 (1996): 1759-1764.

This entry draws heavily from Induced Abortion and Breast Cancer Link.