STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1	"population-based registry study
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2	
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3	The introduction discusses the background of hip dysplasia, its challenges for total hip arthroplasty (THA), and the study's rationale.
Objectives	3	State specific objectives, including any prespecified hypotheses	3	"we aimed to examine the association of age, sex, osteotomy prior to THA, and fixation method on 5- and 10-year revision-free implant survival, reasons for revision, and PROMs of THAs in patients with hip dysplasia"
Methods				
Study design	4	Present key elements of study design early in the paper	4	"This population-based study utilized data from The Dutch Arthroplasty Register (LROI), a national registry that has been collecting data on orthopedic interventions since 2007."
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4	"While patient characteristics have been recorded since the inception of the LROI, BMI and

				PROMs have been collected from 2014 onward. “Survival time was calculated from the date of primary THA to the first revision arthroplasty for any reason, death of the patient, or the end of the study follow-up on January 1, 2023.” “ For functional outcomes, only patients with both preoperative and 12-month postoperative PROMs were included”
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	4	"This study included all THAs with a registered diagnosis of hip dysplasia in the LROI between 2007 and 2021. The diagnosis of hip dysplasia is based on the clinicians’ view using radiographs without validation by a second interpreter."
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case	5	“To assess functional outcomes, propensity score matching using the nearest neighbor method accounted for differences in patient population between <50 and ≥50 years age groups, prior pelvic osteotomy, and non-osteotomy groups. Groups were matched 1:1 on sex, ASA class, BMI, age or prior pelvic osteotomy. A caliper width of

				0.05 was used. All standardized mean differences were <0.100 post-matching." Table 6 and 7 for Numbers
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4	"Patient, procedure, and prothesis characteristics included in this study were age at the time of the procedure, body mass index (BMI), sex, American Society of Anesthesiologists (ASA) class, fixation method (cemented, uncemented, hybrid [cemented femur], or reversed hybrid [cemented cup]), and pelvic osteotomy prior to THA (yes or no)."
			5	"Adjustments were made for age at surgery, sex, osteotomy, and fixation method to discriminate independent risk factors for revision arthroplasty"
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4	"The LROI contains patient, procedure, and prosthesis characteristics as well as validated PROMs; EuroQol 5D (EQ-5D), Oxford Hip Score (OHS), and Hip Disability and Osteoarthritis Outcome Score

				with Physical Function Short Form (HOOS-PS).”
Bias	9	Describe any efforts to address potential sources of bias	4	"Under-registration in milder or non-symptomatic cases might bias this study data, possibly reflecting more severe hip dysplasia cases."
			5	“Adjustments were made for age at surgery, sex, osteotomy, and fixation method to discriminate independent risk factors for revision arthroplasty
Study size	10	Explain how the study size was arrived at	4	“This study included all THAs with a registered diagnosis of hip dysplasia in the LROI between 2007 and 2021. The diagnosis of hip dysplasia is based on the clinicians’ view using radiographs without validation by a second interpreter.”

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Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5	See "Statistical Analysis" part of methods
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5	See "Statistical Analysis" part of methods
		(*b*) Describe any methods used to examine subgroups and interactions	5	See "Statistical Analysis" part of methods
		(*c*) Explain how missing data were addressed	5	See "Statistical Analysis" part of methods
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	4	"The loss to follow-up due to emigration is unknown but is expected to be limited."
		(*e*) Describe any sensitivity analyses	NA	
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6	"7,465 primary THAs with a hip dysplasia diagnosis were registered in the LROI between 2007 and 2021"
		(b) Give reasons for non-participation at each stage		Figure 1
		(c) Consider use of a flow diagram		Figure 1
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6	"Among these, 2,377 THAs (32%) were performed in patients aged under 50 years and 1,124 THA procedures (15%) reported a prior osteotomy. Notably, 71% of the study population received cementless THAs and 92% of all procedures were performed in patients classified as ASA I–II"
		(b) Indicate number of participants with missing data for each variable of interest	-	-
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)		Table 3

Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	7	"The revision-free implant survival of THAs in patients with dysplasia of the hip was 96.4% [CI 96.0–96.8] at 5 years and 94.9% [CI 94.3–95.5] at 10 years."
		Case-control study—Report numbers in each exposure category, or summary measures of exposure		
		Cross-sectional study—Report numbers of outcome events or summary measures		
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	7	"THAs in patients with a prior pelvic osteotomy had a significantly lower revision-free implant survival of 94.8% [CI 93.4–96.2] at 5 years and 92.0% [CI 89.8–94.2] at 10 years, compared with patients without a prior pelvic osteotomy."
			7	"Adjusted analyses showed an HR for revision of 1.5 [CI 1.1–2.0] for THAs in patients with a prior pelvic osteotomy compared with patients without osteotomy, adjusted for age, sex, and fixation method"
		(*b*) Report category boundaries when continuous variables were categorized	6	"THAs performed in patients under 50 years …. than patients 50 years and older."
			7	"Every 10-year increase in age resulted in a higher revision-free implant survival"
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA	

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Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6/7/8	Throughout “Results” section
Discussion				
Key results	18	Summarise key results with reference to study objectives	8	“We found a lower revision free rate in patient with a younger age and those with a history of prior osteotomies. THA patients with a prior osteotomy were associated with lower PROMs. We found no association between fixation method or sex on the implant survival in hip dysplasia patients.”
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	20	“Under-registration in milder or non-symptomatic cases might bias this study data, possibly reflecting more severe hip dysplasia cases”
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	11	"Although the 10-year revision-free implant survival rates of THA in patients with hip dysplasia are excellent, hip dysplasia patients are mostly young when they develop symptoms, and the age seems more the limiting factor."
Generalisability	21	Discuss the generalisability (external validity) of the study results	3	“This study highlights the significant association of patient age and prior osteotomies with implant survival and functional outcomes. Particularly for patients with severe hip dysplasia, who are often young when they develop symptoms, the data underscore the

				importance of personalized treatment strategies."
Other information				
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	-	See COI, no specific funding

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.