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Gestational Weight Loss: Comparison Between the Birth Certificate and the Medical Record, Florida, 2012

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Abstract

Objective Examine agreement with the medical record (MR) when gestational weight loss (GWL) on the Florida birth certificate (BC) is ≥0 pounds (lbs). *Methods* In 2012, 3923 Florida-resident women had a live, singleton birth where BC indicated GWL ≥0 lbs. Of these, we selected a stratified random sample of 2141 and abstracted from the MR prepregnancy and delivery weight data used to compute four estimates of GWL (delivery minus prepregnancy weight) from different sources found within the MR (first prenatal visit record, nursing admission record, labor/delivery records, BC worksheet). We assessed agreement between the BC and MR estimates for GWL categorized as 0, 1–10, 11–19, and ≥20 lbs. *Results* Prepregnancy or delivery weight was missing or source not in the MR for 23–81% of records. Overall agreement on GWL between the BC and the four MR estimates ranged from 39.1 to 57.2%. Agreement by GWL category ranged from 10.6 to 38.0% for 0 lbs, 47.6 to 64.3% for 1–10 lbs, 49.5 to 60.0% for 11–19 lbs, and 47.8 to 67.7% for ≥20 lbs. *Conclusions* Prepregnancy and delivery weight were frequently missing from the MR or inconsistently documented across the different sources. When the BC indicated GWL ≥0 lbs, agreement with different sources of the MR was moderate to poor revealing the need to reduce missing data and better understand the quality of weight data in the MR.

Keywords Prepregnancy weight · Delivery weight · Gestational weight gain · Gestational weight loss · Birth certificate

Significance

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Introduction

Weight change over the duration of pregnancy can affect the health of both the woman and her baby. Gestational weight loss can result in small for gestational age babies and preterm birth (Dzakpasu et al. 2015; Simas et al. 2012). However, in women who are obese it can decrease the likelihood of preeclampsia or cesarean section (Beyerlein et al. 2011; Bogaerts et al. 2015). Recently, Florida identified an increase in gestational weight loss calculated from the birth certificate and wanted to examine the quality of these data against the medical record. Further, the National Academy of Medicine identified a need for more research on health outcomes associated with zero weight gain or weight loss

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during pregnancy, particularly among women with pregravid obesity (IOM (Institute of Medicine) and NRC (National Research Council) 2009). The 2003 revised version of the standard U.S. birth certificate collects data on maternal weight prior to pregnancy and at delivery which is used to calculate gestational weight change; however, few studies have assessed agreement between the birth certificate and medical record specifically for gestational weight loss (Bodnar et al. 2014; Wright et al. 2012; Headen et al. 2017).

The birth certificate registers the birth of a child and collects information on the circumstances of the birth. The medical record for child birth is a compilation of information from multiple sources and typically includes prenatal care records sent from the obstetric care provider and labor and delivery records from delivery hospitalization. In Florida, to complete the birth certificate, hospital staff are instructed to obtain medical information, including prepregnancy weight and weight at delivery from the medical record and from the mother if the information is not available in the medical records (Florida Statue 2017; Florida Administrative Code 2016). Consequently, data on prepregnancy weight and weight at delivery may be found in multiple sources.

In this study, we identified birth certificates indicating gestational weight loss and then assessed agreement between calculated gestational weight loss from the birth certificate in comparison to all possible combinations of prepregnancy and delivery weight data from the different sources found in the medical record including the birth certificate worksheet when available.

Methods

Of 214,109 Florida Certificates of Live Birth in 2012, we identified 4209 birth certificate records indicating gestational weight loss or zero gain (delivery weight − prepregnancy weight ≤ 0; hereafter referred to as gestational weight loss), of which 3923 birth certificate records met our inclusion criteria of being a Florida resident with a singleton delivery at a hospital with ≥ 100 births per year, and a birth certificate with data for height, prepregnancy weight, and delivery weight. We included only singleton deliveries because of the complexity in matching mother's record to multiple birth certificates. The Florida Department of Health (FDOH) conducted all analyses. The Centers for Disease Control and Prevention's (CDC) Institutional Review Board approval was not needed for this project because CDC was not engaged in human subjects research.

Gestational weight change tends to be inversely related to prepregnancy body mass index (BMI); thus, gestational weight loss is more common among women with obesity (IOM (Institute of Medicine) and NRC (National Research Council) 2009). To ensure an adequate sample across body mass index (BMI) groups and gestational weight loss categories, we used stratified random sampling to select birth certificate records for our sample. Prepregnancy BMI [calculated as prepregnancy weight (kg)/height^2 (m)] was categorized as underweight (BMI < 18.5); normal (BMI 18.5–24.9); overweight (BMI 25.0–29.9); obese class I (BMI 30.0–34.9); and obese class II and III (BMI ≥ 35.0). We created 15 strata by using 3 categories of gestational weight loss (1–10 lbs; 11–19 lbs; and 20 or more lbs) for each BMI category. We examined zero gain by 2 categories of BMI (BMI < 25 and BMI ≥ 25). Among the 3923 eligible birth registrations, we sampled 2183 records based on a 95% margin of error and to meet cost allocations. Deliveries occurred at 115 hospitals which were invited to participate in our study; three hospitals declined. We abstracted data from 2141 medical records at 112 hospitals. Medical records were identified using mother's full name and date of birth, and infant's date of birth (if available). If needed, social security numbers were provided by the FDOH via telephone. Each record was given a random identification number to ensure that abstraction forms were deidentified.

In Florida, rather than a separate facility and maternal worksheet provided by the National Center for Health Statistics (NCHS) (2016) most hospitals use the FDOH version of the birth certificate worksheet which is a combination of the two national worksheets. Hospital staff who obtain data for the birth certificate are instructed to ask the parent(s) to complete the demographic portion of the worksheet. In addition, hospital staff in Florida are instructed to obtain medical information, including prepregnancy weight and weight at delivery from the medical record. When items from the medical record are not available (e.g., when the prenatal records are not in the medical record), hospital staff are instructed to ask the parent(s) to provide the information.

From each medical record, we abstracted prepregnancy weight from the first prenatal record and the birth certificate worksheet and abstracted delivery weight from the nursing admission record and the labor and delivery record. We also abstracted the date of each of these records and height. Using the possible combinations of prepregnancy and delivery weight from sources in the medical record, we calculated gestational weight change using four approaches:

- *Approach #1* Delivery weight from labor and delivery record minus prepregnancy weight from first prenatal visit
- *Approach #2* Delivery weight from nursing admission record minus prepregnancy weight from first prenatal visit
- *Approach #3* Delivery weight from labor and delivery record minus prepregnancy weight from birth certificate worksheet

- *Approach #4* Delivery weight from nursing admission record minus prepregnancy weight from birth certificate worksheet

Data Analysis

We examined demographic and behavioral characteristics of our sampled population by gestational weight loss categories using data obtained from the birth certificate. We used a Chi square test to determine significance across weight loss categories for each characteristic. Two-tailed p values < 0.05 were considered statistically significant.

We examined agreement between the birth certificate and the medical record using the four approaches for calculating gestational weight change. Medical record gestational weight change was categorized as gestational weight loss (3 categories: ≥20 lbs, 11–19 lbs, or 1–10 lbs), zero weight gain (0 lbs), or weight gain (> 0 lbs). To compare estimates to previously published studies, we also collapsed all the gestational weight loss categories and zero weight gain into one category, referred to as combined gestational weight loss ≥ 0. Due to varying amounts of missing data in the medical record, we conducted analyses using all available data; however, we performed a sensitivity analysis restricting to records with complete data sources across the 4 approaches (n = 309). Data were considered unavailable if either the medical record source was missing from the medical record or the data item was not recorded on the medical record source.

All data were weighted to represent the 3923 Florida residents who delivered a live, singleton birth in 2012 with gestational weight loss ≥ 0 lbs indicated on the birth certificate. Weights were calculated by dividing the number of residents per stratum in the sampling frame by the number of residents per stratum in the sample. Unless otherwise noted, percentages are weighted and sample sizes are unweighted. We used SAS Enterprise Guide 4.3 (SAS Institute Inc., Cary, NC) for analyses.

Results

Availability of weight data varied by medical record source. Among the 2141 medical records included in our study, prepregnancy weight was available for 48.4% of first prenatal visit records and 18.6% of birth certificate worksheets. Notably, the birth certificate worksheet was often not retained in the medical records. Only 36% of 112 participating hospitals had the birth certificate worksheet in at least one of the medical records included in the study. Delivery weight was available for 76.7% of nursing admission records and 65.5% of labor/delivery records.

The birth certificate indicated that 41.3% of mothers with gestational weight loss were non-Hispanic Black, 39.3% were non-Hispanic White, and 19.4% were Hispanic (Table 1). Mean age at delivery was 28 years (SE = 6.0) (data not shown). The prevalence of gestational weight loss was inversely related to prepregnancy BMI; less than 1% of women were underweight, 9.8% normal weight, 19.9% overweight, 23.7% obese class I and 46.0% obese class II and III. Maternal age ($p = 0.01$), education ($p = 0.01$), payer source (0.03), and BMI ($p < 0.001$) varied by the amount of gestational weight loss calculated from the birth certificate; notably, the highest BMI group had the highest proportion of gestational weight loss ≥ 20 lbs compared to the other BMI categories.

Overall agreement on gestational weight loss between the birth certificate and the medical record ranged from 39.1% for approach #2 to 57.2% for approach #4 (Table 2). The amount of gestational weight loss calculated from the medical record was greater than the amount calculated from the birth certificate for 6.3–12.0% of records (data not shown). Conversely, the amount of gestational weight loss calculated from the birth certificate was greater than the amount calculated from the medical record for 36.5–54.4% of records. Agreement varied by the amount of gestational weight loss, ranging from 10.6 to 38.0% for 0 lbs, 47.6–64.3% for a 1 to 10 lbs, 49.5 to 60.0% for 11–19 lbs, and 47.8 to 67.7% for ≥ 20 lbs (Table 2). Further, when we collapsed all weight loss and zero gain into one category (combined gestational weight loss ≥ 0), agreement between the medical record and birth certificate ranged from 54.3% for approach #4 to 71.2% for approach #2 (data not shown). When we restricted the sample to records with no missing data sources (n = 309), overall agreement between the birth certificate and the medical record was similar to results reported in Table 2 (Supplemental Table 1). However, even among the n = 309 that had all data sources, there was 25–75% missing prepregnancy weight data within the sources. Agreement with at least one of the four rules was 47.3%.

Discussion

Hospital staff in Florida rely on multiple sources in the medical record and the birth certificate worksheet to obtain maternal prepregnancy and delivery weight when completing the birth certificate. As a result, several possible estimates for gestational weight change may be ascertained. In this study, we identified birth certificates indicating gestational weight loss and then assessed whether the birth certificate reflects what is recorded on sources in the medical record by examining the possible combinations of prepregnancy and delivery weight data from medical record sources used to calculate gestational change. Agreement for

Table 1 Maternal demographic and behavioral characteristics by no weight gain or gestational weight loss category from the Birth Certificate, Florida 2012 Births

	Total		No weight gain		Wgt loss 1–10 lbs		Wgt loss 11–19 lbs		Wgt loss 20 + lbs		p Value
	n**	% (SE)	n	% (SE)	n	% (SE)	n	% (SE)	n	% (SE)	
Race/ethnicity (n = 2068)											
White, non-Hispanic	811	39.3 (1.1)	221	39.3 (2.2)	371	39.7 (1.6)	114	36.0 (2.7)	105	41.6 (3.1)	0.86
Black, non-Hispanic	853	41.3 (1.1)	221	41.1 (2.2)	386	40.6 (1.6)	145	45.5 (2.8)	101	40.4 (3.1)	
Hispanic	404	19.4 (0.9)	107	19.6 (1.8)	190	19.7 (1.3)	60	18.5 (2.2)	47	18.0 (2.4)	
Age (years) (n = 2057)											
20 or younger	160	7.5 (0.6)	63	10.3 (1.3)	73	6.8 (0.8)	10	3.0 (1.0)	14	5.7 (1.5)	0.01
Between 21 and 25	623	30.4 (1.1)	171	31.8 (2.1)	283	29.8 (1.5)	96	29.7 (2.6)	73	29.0 (2.9)	
Between 26 and 30	634	31.2 (1.1)	161	31.0 (2.1)	280	30.1 (1.5)	110	35.5 (2.7)	83	32.9 (3.0)	
Between 31 and 35	401	19.7 (0.9)	94	17.1 (1.7)	196	21.6 (1.4)	59	18.6 (2.2)	52	20.7 (2.6)	
36 and older	239	11.2 (0.7)	54	9.8 (1.3)	113	11.8 (1.1)	42	13.2 (1.9)	30	11.7 (2.0)	
Marital status (n = 2141)											
Married	896	42.6 (1.1)	235	41.3 (2.1)	421	44.2 (1.6)	139	43.0 (2.8)	101	39.2 (3.1)	0.44
Unmarried	1244	57.3 (1.1)	339	58.8 (2.1)	559	55.7 (1.6)	188	57.0 (2.8)	158	60.8 (3.1)	
Unknown	1	0.1 (0.6)	0	0.0 (0.0)	1	0.1 (0.1)	0	0.0 (0.0)	0	0.0 (0.0)	
Education (n = 1914)											
Less than high school	447	21.8 (1.0)	108	19.4 (1.8)	203	22.0 (1.4)	62	21.0 (2.4)	74	31.0 (3.0)	0.01
High school or GED	764	41.0 (1.2)	224	44.2 (2.2)	344	40.1 (1.7)	122	42.0 (2.9)	74	31.5 (3.1)	
Some College	452	24.0 (1.0)	111	21.5 (1.9)	208	25.3 (1.5)	76	26.4 (2.6)	57	24.5 (2.8)	
Bachelor or Higher	251	13.3 (0.8)	84	15.0 (1.6)	106	12.6 (1.2)	30	10.6 (1.8)	31	12.9 (2.2)	
Payer source (n = 2138)											
Medicaid	1409	65.5 (1.1)	367	65.1 (2.1)	628	63.5 (1.6)	229	70.2 (2.5)	185	72.0 (2.8)	0.03
Private insurance	576	27.8 (1.0)	151	26.7 (1.9)	279	29.7 (1.5)	79	24.6 (2.4)	67	25.7 (2.7)	
Self-pay	136	6.0 (0.5)	49	7.4 (1.1)	65	6.1 (0.7)	18	5.0 (1.1)	4	1.4 (0.7)	
Other	17	0.7 (0.2)	5	0.8 (0.4)	8	0.7 (0.3)	1	0.3 (0.3)	3	1.0 (0.5)	
Prepregnancy body mass index (n = 2141)											
Underweight (< 18.5 kg/m^2)	20	0.7 (0.1)	16	1.6 (0.4)	3	0.2 (0.0)	1	0.2 (0.0)	0	0.0 (0.0)	< 0.001*
Normal (18.5–24.9 kg/m^2)	296	9.8 (0.1)	150	15.0 (0.4)	129	9.0 (0.0)	13	3.1 (0.0)	4	1.2 (0.0)	
Overweight (25.0–29.9 kg/m^2)	423	19.9 (0.7)	130	26.6 (1.9)	224	19.2 (0.0)	40	10.1 (0.0)	29	9.1 (0.0)	
Obese Class I (30–34.9 kg/m^2)	512	23.7 (0.7)	122	24.9 (1.9)	259	24.4 (0.0)	84	23.1 (0.0)	47	15.1 (0.0)	
Obese Class II and III (≥ 35.0 kg/m^2)	890	46.0 (0.7)	156	31.9 (2.0)	366	47.3 (0.0)	189	63.4 (0.0)	179	74.6 (0.0)	
Smoking status (n = 2135)											
Did not smoke before or during pregnancy	1865	88.4 (0.7)	515	90.6 (1.2)	846	87.5 (1.0)	283	87.0 (1.8)	221	86.2 (2.2)	0.19
Smoked before but not during pregnancy	27	1.3 (0.3)	7	1.3 (0.5)	15	1.5 (0.4)	3	1.0 (0.5)	2	0.7 (0.5)	
Smoked during pregnancy	243	10.3 (0.7)	51	8.0 (1.1)	117	11.0 (1.0)	41	12.0 (1.8)	34	13.1 (2.1)	

*Statistically significant if underweight and normal are combined. Significance tests cannot be run if any cell has 0 observations

**n's do not add up to 2141 due to missing information in the birth certificate

gestational weight loss within 10 lbs intervals ranged from 39 to 57%. The lowest agreement (≤ 38%) was observed for zero weight gain. Agreement increased to 54–71% when any weight loss or zero gain was combined into one category (gestational weight loss ≥ 0). Our findings also demonstrate substantial variability in the sources of prepregnancy and delivery weight available within the medical record, which poses considerable difficulties for evaluating the quality of weight data on the birth certificate.

Accurate completion of maternal weight for the birth certificate can be a challenge, particularly when data are often missing or are available from multiple sources in the medical record and the recorded values can vary. NCHS and the National Association for Public Health Statistics and Information Systems (NAPHSIS) identifies self-report on the birth certificate worksheet as the preferred source for prepregnancy weight, with the prenatal record as an alternative source (NCHS 2016). For delivery weight, NCHS

Table 2 Agreement of gestational weight change category between the birth certificate and the 4 recommended approaches for estimating gestational weight change from the medical record**

Birth certificate	Approaches for estimating gestational weight change					
	Any weight gain % (n)	Zero weight gain % (n)	Weight loss 1–10 lbs % (n)	Weight loss 11–19 lbs % (n)	Weight loss 20 + lbs % (n)	Overall agreement across all categories % (n)
Approach #1 Prepregnancy weight from first prenatal visit and delivery weight from labor and delivery record (n = 662)						
Zero weight gain	73.3 (124)	*14.2 (24)*	8.9 (15)	3.0 (5)	0.6 (1)	*39.4 (261)*
Weight loss 1–10 lbs	36.3 (115)	6.0 (19)	*47.6 (151)*	6.6 (21)	3.5 (11)	
Weight loss 11–19 lbs	17.9 (17)	3.2 (3)	22.1 (21)	*49.5 (47)*	7.4 (7)	
Weight loss 20 + lbs	27.2 (22)	3.7 (3)	8.6 (7)	12.3 (10)	*48.1 (39)*	
Approach #2 Prepregnancy weight from first prenatal visit and delivery weight from nursing admission record (n = 798)						
Zero weight gain	79.9 (159)	*10.6 (21)*	6.5 (13)	2.5 (5)	0.5 (1)	*39.1 (312)*
Weight loss 1–10 lbs	39.8 (155)	5.7 (22)	*47.6 (185)*	5.4 (21)	1.5 (6)	
Weight loss 11–19 lbs	21.2 (25)	3.4 (4)	17.8 (21)	*52.5 (62)*	5.1 (6)	
Weight Loss 20 + lbs	28.3 (26)	1.1 (1)	8.7 (8)	14.1 (13)	*47.8 (44)*	
Approach #3 Prepregnancy weight from birth certificate worksheet and delivery weight from labor and delivery record (n = 266)						
Zero weight gain	64.3 (54)	*22.6 (19)*	6.0 (5)	2.4 (2)	4.8 (4)	*47.4 (126)*
Weight loss 1–10 lbs	21.3 (24)	7.0 (8)	*60.2 (68)*	7.1 (8)	4.4 (5)	
Weight loss 11–19 lbs	12.8 (5)	0 (0)	7.7 (3)	*59.0 (23)*	20.5 (8)	
Weight loss 20 + lbs	30.0 (9)	0 (0)	3.3 (1)	13.3 (4)	*53.3 (16)*	
Approach #4 Prepregnancy weight from birth certificate worksheet and delivery weight from nursing admission record (n = 271)						
Zero weight gain	49.3 (35)	*38.0 (27)*	8.4 (6)	2.8 (2)	1.4 (1)	*57.2 (155)*
Weight loss 1–10 lbs	22.5 (29)	8.5 (11)	*64.3 (83)*	3.9 (5)	0.8 (1)	
Weight loss 11–19 lbs	17.5 (7)	7.5 (3)	10.0 (4)	*60.0 (24)*	5.0 (2)	
Weight loss 20 + lbs	22.6 (7)	0 (0)	0 (0)	9.7 (3)	*67.7 (21)*	

Highlighted rows (italics) are agreement in the same categories between BC and MR calculations

** Missing data on either the medical record or birth certificate are excluded from analysis

and NAPHSIS guidance identifies the labor and delivery record or the admission history and physical (also called nursing admission record) as the preferred source. When we restricted to records with complete data from all medical record sources including the birth certificate worksheet (which includes mother's self-report if data are obtained from the mother), only 47.3% had agreement within 10 lbs intervals between the birth certificate and at least one of the four medical record approaches for calculating gestational weight change. A reason for this may be because information recorded on the birth certificate for prepregnancy and delivery weight came from sources other than the first prenatal record, nursing admission record, labor and delivery record, or birth certificate worksheet, such as a verbal report from the mother that was not recorded on the birth certificate worksheet. Another possible reason could be that the information is not being recorded in a standard format across sources. Further investigation may be warranted.

To our knowledge, only one other study has compared gestational weight loss calculated from the 2003 revision of the US standard birth certificate to the medical record (Bodnar et al. 2014). This study used prepregnancy weight from the first prenatal record and weight at delivery from the labor and delivery record and found that agreement on gestational weight change between birth certificate and medical record ranged between 50–73%, depending on BMI, among women who gained less than the 20th percentile for weight (which included weight loss) These results are similar to ours when we combined all weight loss or zero gain into one category. This study was limited to one hospital in Pittsburgh and did not examine agreement by other data sources within the medical record.

Because birth certificate data have multiple uses, including public health surveillance, regular training of clinicians and clerical hospital staff to understand the importance of accurate and timely ascertainment of birth certificate data may help in standardizing birth certificate data collection efforts (NCHS 2017). In Florida, to improve completion and accuracy of the birth certificate, the electronic birth registration system includes data quality checks that prompt data entry staff to review the medical record when birth certificate fields are left blank or when data entered are outside established limits. Findings from this analysis suggest that Florida may consider developing additional prompts to

verify the weight data entered when calculated gestational weight loss is > 10 lbs. Furthermore, the majority of hospitals shred the maternal worksheet once the birth certificate is completed. In our study, only 36% of hospitals had a birth certificate worksheet available in at least some of the medical records which prevents the retrospective evaluation of data quality. Therefore, future research studies should consider a prospective evaluation of data quality that can differentiate between data collected from the medical records, maternal self-report, and the true value maternal weight. Finally, a future study should consider examining various characteristics contributing to discrepancies and missing values including variation by hospitals, abstractors, and maternal characteristics.

Following completion of the study, the Florida Department of Heath provided a one-page summary of the results to all the facilities that participated in the review. The department has long maintained a tool, available only to facilities, that allows each facility to assess its data for missing values. The department has been working closely with the Florida Perinatal Quality Collaborative to improve the quality of birth certificate data including weight gain during pregnancy by engaging in quality improvement initiatives with volunteer facilities; the pilot was successful and a larger statewide initiative is being promoted. Missing or incorrect data is a problem nationwide, not just in Florida. In cooperation with NAPHSIS, NCHS has convened several workgroups to review and make recommendations for improvement to birth data quality as well as to improve training for birth registration clerks nation-wide. The department has several staff that participate in these workgroups.

Strengths of this study include the high participation rate of hospitals (112 out of 115), availability of 98% of the medical records for our sampled birth certificates, and use of experienced medical record abstractors. Further, Florida has the third largest number of births in the US, which allowed us to examine a large sample of mothers across BMI categories who had gestational weight loss or zero gain.

A limitation of this study was the high percentage of sources missing from the medical records including the birth certificate worksheets, limiting our ability to assess agreement with one of the four data sources we examined. Further, when birth certificate worksheets were available, it was not clear if prepregnancy weight was ascertained from the prenatal record or mother's self-report. Florida's protocol is to defer to the prenatal record first, and if unavailable, obtain mother's self -report; but the ultimate source of this data is not indicated. Further, when we restricted to 309 women with all data sources present in the medical record, about half had agreement with at least 1 of the four rules. For the other half of records, it is unclear where this information was ascertained (e.g. another source in the medical record, mother's self-report but not recorded on birth certificate worksheet, or unknown). For example, 70% (218/309) had a both weight recorded on the birth certificate worksheet. Large amounts of missing data is consistent with other studies using medical records to validate weight on the birth certificate (Wright et al. 2012; Northam and Knapp 2006; Rice et al. 2007). Our findings cannot be generalized beyond the state of Florida as and different states adopt various procedures for collecting weight data. In addition, Florida does not follow the NCHS recommendations for collecting weight data. It should also be noted that we assessed whether the birth certificate reflects the data that is recorded in the medical record and/or birth certificate worksheet. This study could not determine accuracy of recorded weights, particularly self-reported weights which are subject to reporting bias. In general, there is limited data comparing self-reported prepregnancy weight to weight measured prior to conception to fully understand the degree of recall bias (Headen et al. 2017).

Conclusions

The birth certificate could serve as a valuable data source to study health outcomes associated with gestational weight loss; however, more research is needed to understand the quality of the weight data and to identify the best sources for this information. In this study, we assessed whether the birth certificate reflects the data that is recorded in the medical record and/or birth certificate worksheet but encountered significant missing data in the medical record. Strategies to reduce missing weight data in the medical record are needed. By ensuring access to both the medical record and the birth certificate worksheet (which may need to be retained for evaluation purposes) future studies would be able to more completely evaluate if information is being transferred as recommended. It would also be useful if the birth certificate worksheet differentiates data obtained from the medical record and the mother. Given the inconsistencies in the different sources of the weight data, additional studies are also needed to determine the most accurate and reliable data source. Without additional studies in other jurisdictions and that overcome limitations of missing data, it is unclear whether the birth certificate should be used to evaluate health outcomes associated with the degree of gestational weight loss.

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Compliance with ethical standards

Conflict of interest The authors do not have any conflicts of interests.

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