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Resource Realities: Exploring the Foundations of Successful Implementation in School-Based Drug Prevention*

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ABSTRACT

Background: Comprehensive health education in schools can effectively prevent drug use and related outcomes, but successful implementation remains challenging. Contextual determinants, including intervention-setting compatibility, focus on the intervention, available resources, and leadership support, influence implementation success. This study investigates the impact of multilevel contextual determinants on Michigan Model for Health: (MMH) curriculum fidelity.

Methods: High school health teachers across Michigan ($N = 171$) participated in an MMH implementation survey. We used structural equation modeling to investigate the relative contributions of contextual determinants to implementation fidelity while also permitting the determinant factors to covary.

Results: The models demonstrate a good fit with the data (structural: $X^2 = 51$, df: 34, $p = 0.03$; RMSEA: 0.06, 95% CI: 0.02, 0.08; CFI: 0.98). Results indicate that the context latent factors individually were associated with fidelity. Examined together, we found significant covariance between the latent factors, but only resources predicted fidelity.

Implications for School Health Policy, Practice, and Equity: School health policy and practice benefit from sufficient resources to support prevention curriculum implementation. Insufficient resources exacerbate existing barriers in low-resource communities, leading to unequal intervention implementation and widening health disparities.

Conclusions: Our results indicate that while contextual determinants are interrelated, sufficient resources are foundational to successful implementation.

Adolescence is a critical developmental period that marks the potential emergence of health issues that negatively impact morbidity and mortality, such as mental health problems and substance use [1]. Federal agencies such as the National Institute on Drug Abuse (NIDA) are highlighting the need to enhance the focus on prevention as an underutilized tool in interrupting public health challenges such as the opioid crisis [2]. Schools are primary settings for delivering universal or Tier 1 interventions for children and youth, including drug use prevention. Decades of research indicate that school-based prevention interventions are effective at building critical protective factors and mitigating risk factors that help delay the onset and escalation of drug use

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and its consequences [3–5]. Schools are a prominent system for prevention and treatment services for children and youth in the United States [6, 7], especially for those from economically disadvantaged or marginalized communities with limited access to behavioral health services [8].

School-based, skill-focused prevention that is theory-based, aligned with national health education standards, and consistent with the Centers for Disease Control and Prevention's (CDC) characteristics of effective health education has consistently demonstrated a positive impact on short- and long-term drug use outcomes [4, 9]. Prevention and health education are also core tenets of the whole school, whole child, whole community model (WSCC), used widely in the education sector, emphasizing multilevel contributions (e.g., school and the greater community) to student academic success and well-being [10]. Efficacious Tier 1 evidence-based interventions (EBIs), such as the Michigan Model for Health (MMH), reach all youth and can build vital skills that support student well-being and are an excellent investment from a societal perspective [11]. A report from the U.S. Department of Education estimates that effective prevention could save $18 for every $1 invested; in the United States, nationwide implementation of effective school-based EBIs with fidelity could save $1.3 billion annually [11]. NIDA has reported that "interventions (to) prevent teen substance use and other behavioral problems have been found or estimated to be stunningly good investments." [2] Yet, the potential impact of prevention on the well-being of youth remains largely unrealized. Only 3.5% of school-based EBIs delivered are both evidence-based and well-implemented [5].

1 | The EBI: Michigan Model for Health

MMH is a comprehensive health education curriculum grounded in social cognitive theory and the health belief model that has shown efficacy in reducing substance use among high school students [12–15]. In Michigan, high school students are required to complete a credit of health class. MMH is a skill-focused curriculum centered on mitigating risk and building protective factors associated with multiple, interrelated outcomes (e.g., substance use and mental health) [16, 17]. MMH is recognized as evidence-based by the Collaborative on Academic and Social and Emotional Learning (CASEL) and is aligned with the health education standards for Michigan and the USA [18, 19]. However, the MMH, consistent with other EBIs, is infrequently delivered with fidelity, especially in economically challenged communities [17, 20, 21].

2 | Health Equity and EBI Implementation in Schools

Health disparities in addiction and overdose death rates continue to worsen, especially among those experiencing disadvantage, income inequality, and other adverse social determinants of health [22]. Recent calls to address these disparities underscore the need for implementing available, evidence-based prevention for disproportionately affected populations [22]. Adolescents experiencing marginalization, trauma, and/or socioeconomic disadvantage are at an elevated risk of substance misuse, developing substance use disorders (SUDs), as well as school failure and mental illness [23]. This elevated risk is due to high levels of chronic stress and limited access to treatment and prevention services, which together increase the risk of poor health outcomes, including addiction [24]. School-based prevention can have a lasting impact by preventing or reducing multiple interrelated outcomes (e.g., drug use and mental illness) through mitigating risk exposure and promoting positive developmental trajectories.

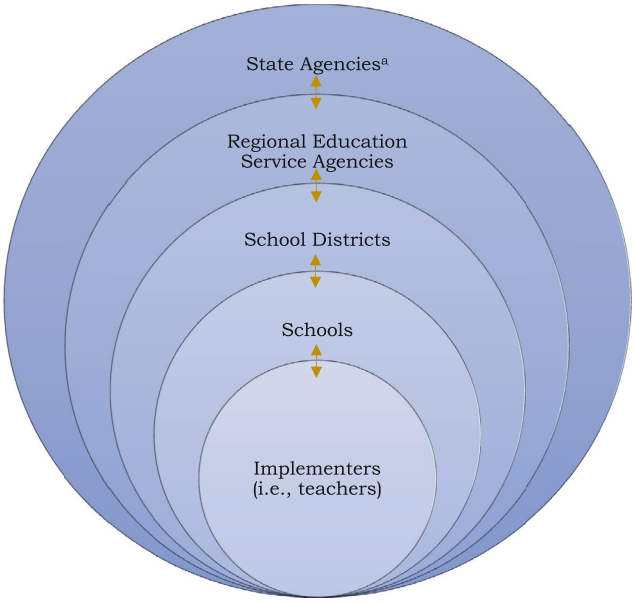


FIGURE 1 | Multilevel influences on implementation success in schools; [a]state and regional agencies include the State Department of Health and Human Services, State Department of Education, and Regional Education Service Agencies.

While researchers have studied the influence of intervention characteristics and individual implementers (e.g., teachers) on the delivery of health interventions in schools [25], researchers also acknowledge the profound impact of context (i.e., inner and outer settings) on implementation success [25–27]. Even with the most dedicated implementers and thoughtful intervention development, EBI implementation will likely fail without sufficient attention to contextual influences, as "bad systems trump good programs." [27, 28] Context, in school-based prevention implementation, is the set of circumstances or unique factors that influence or shape EBI delivery [29]. Most implementation science determinant frameworks focus on contextual factors at the inner and outer setting levels, underscoring their importance in facilitating or inhibiting successful implementation [27, 30]. The Consolidated Framework for Implementation Research (CFIR) refers to the context as the inner (e.g., organizational or school level) and outer (e.g., district, regional, or state-level) settings that represent the dynamic system in which intervention implementation takes place (see Figure 1) [29, 30].

3 | Contextual Determinants (Inner and Outer Settings)

Characteristics of the inner setting (i.e., the school) have demonstrated a robust relationship to implementing EBIs in schools (see

Figure 1) [27, 31]. For example, having support within the school, generally from school leadership, is an essential determinant of implementation. School leadership support for EBIs can include proactive actions to remove obstacles, such as eliminating barriers to attending curriculum-focused professional development (PD) or protecting planning time for engaging in health curriculum training or technical assistance [27]. Meta-analyses indicate that this type of leadership effectively promotes organizational change [32]. Intervention compatibility with the setting, or fit, is another important factor related to the inner context. Previous research indicates that intervention-setting fit is essential to school-based EBI implementation [25, 33]. The fit of an intervention with the values, structure, and roles within an organization contributes to the likelihood that the intervention is adopted and sustained [31, 34]. For example, a compatible intervention is likely aligned with building-level priorities, consistent with organizational policies, and has support (e.g., a champion) within the organization [34].

Researchers suggest that the outer context, including regional school service agencies (RESAs) and state agencies (e.g., state departments of education or health and human services), can be "extraordinarily influential" but are often understudied (see Figure 1) [25]. One aspect of the context related to implementation success is a focus on the EBI [27]. EBI focus indicates to what extent the intervention is a priority and the degree to which users perceive its implementation as essential [27]. In clinical implementation research, the EBI focus is often considered an inner setting or organizational-level factor [35]. In some schools, however, EBI focus may also be at the district or regional (i.e., RESA) levels. While it may vary, the extent to which Tier 1 EBIs, such as MMH, are supported and prioritized often occurs across the school, district, and RESA levels [35]. For example, in a local control environment such as Michigan, actions to prioritize MMH as the health curriculum to be adopted often occur at the organizational level, and the provision of training and technical assistance for MMH occurs at the RESA level. Thus, the perceived priority of an EBI, though generally considered an inner setting factor using the CFIR, and external influences such as district or RESA level supports can also be powerful in shaping its use.

Resources, including financial, material, or human/social resources, are another contextual determinant of implementation. Several recent systematic reviews in schools and health care found the lack of resources to be an important determinant of successful health intervention implementation [34, 36, 37]. Implementation resources are "enabling" as they are foundational for implementation capacity [30]. The availability of sufficient funding and resources is vital to effective implementation. Resources are needed to support implementers in accessing new materials, training, meetings, and generally supporting the processes and systems that enable successful implementation, whether within or outside the educational system [31]. Available resources are listed in the inner setting domain within CFIR, but financing and economic conditions are considered within the outer setting domain [38]. Access to MMH curriculum resources, such as a curriculum subscription and health coordinator training and support, is highly dependent on the resource allocation for MMH within the RESA. Links to community organizations related to health and health curriculum delivery are also important; for example, community linkages may provide access to additional funding, training, and collaborations (e.g., local health educators to support health curricula) [39]. Recent systematic reviews also indicate that resource provision, time allocation, and other tangible supports are often building-level decisions influencing implementation and sustainability [37, 40], underscoring the interrelatedness of these factors.

Resource considerations may be particularly salient in low-resourced community schools to ensure that implementation efforts address health inequities. Researchers suggest that those in most need of benefiting from an EBI may also be the least likely to receive it or receive it as intended, which is called the "inverse prevention law." [41] As public health events locally and globally have consistently demonstrated, socioeconomically disadvantaged and marginalized populations are most likely to suffer negative consequences disproportionately in the short and long term [42]. During the COVID-19 pandemic, for example, we saw exacerbating mental health and substance use issues among marginalized populations who have the least access to treatment and prevention services [43]. Schools are well suited to utilizing implementation science to enhance equity as they often have notable experience working with underserved populations [44]. Health equity may be the "central indicator of success" for implementation research but requires a greater focus to increase the potential to benefit all populations [44]. Improving student health and well-being by leveraging existing school-based EBIs is vital to enhancing equity [43].

Implementing Tier 1 interventions in schools is a complex endeavor with multiple determinants of implementation success. In the current study, we examine interrelated determinants of success, including characteristics of the context that span inner and outer settings (e.g., supportive leadership and focus on evidence-based practice and resources; see Figure 1). The purpose of the current study is to identify the relative contributions of contextual factors on implementation fidelity (i.e., dose delivered). Our research question is: What is the relationship between contextual determinants spanning the inner and outer settings and implementation fidelity of the MMH curriculum among high school health teachers in Michigan? We use structural equation modeling (SEM) to examine the multifaceted relationships between contextual factors and fidelity, as it permits a nuanced understanding of each contextual factor's individual and collective influence on the outcome of interest [45]. By allowing factors to covary, SEM allows us to explicitly model and test these contextual factors' interrelatedness. This helps us understand how these factors work together rather than in isolation [46]. This study will fill an important research gap by identifying and prioritizing contextual barriers to effectively implement Tier 1 prevention and health promotion EBIs in schools.

4 | Methods

4.1 | Research Context

Michigan's education landscape is diverse, encompassing urban, rural, and suburban districts with various needs and resources. This diversity is mirrored in the economic realities of these

districts, with some facing considerable financial constraints that hinder their capacity to offer equitable educational opportunities [47]. Further complicating this landscape is Michigan's principle of local control, which grants individual school districts a significant degree of autonomy [48]. While this decentralized structure allows for tailored decision-making at the local level, it can also worsen existing inequities in the implementation of evidence-based practices, funding allocations, and the availability of essential resources [48, 49].

4.2 | Participants

In collaboration with the state's network of regional school health coordinators, we recruited 171 teachers to complete a survey regarding their use of the MMH curriculum. Regional school health coordinators are a network of implementation support practitioners with established regions across the state of Michigan, whose primary purpose is to support health education in every public, private, and charter school in the state. They are implementation support practitioners collaborating with school staff, parents, and community members to promote students' physical, mental, and social well-being. The researchers have a well-established community partnership with the regional school health coordinator network and worked collaboratively to recruit eligible participants. Eligibility requirements included (1) being 18 years of age or older, (2) working in a Michigan high school, and (3) teaching at least one period of high school health class. The sample represented teachers from 58 of Michigan's 83 counties (23 teachers did not report). Teacher demographics are listed in Table 1. Our sample is representative of teacher demographics across Michigan, where 91% of educators in 2019–202 were white and 75% were female [50]. County-level poverty data from the National Institute on Minority Health and Health Disparities (NIMHD) indicate that 8.8% of families live below the federal poverty limit, ranging from 2.9% to 17.4% [51]. Our study includes the counties with the highest and lowest poverty levels in the state, indicating that the sample is illustrative of the many socioeconomic experiences in Michigan [51].

TABLE 1 | Participant demographics and primary outcome.

Demographic	*N*	%
Gender		
Male	74	43
Women	99	57
Race		
White	160	94
African American	7	4
Latino/a	4	2
Experience		
Less than 5 years	34	20
5–15 years	80	47
16 years or more	57	33
Dose delivered	Mean: 2.34/4	SD: 1.18

4.2.1 | Instrumentation

4.2.1.1 | Fidelity: Dose Delivered. We assessed fidelity using dose delivered, the dimension of fidelity measured by state agency partners. We asked teachers to report the percentage of the MMH curriculum taught for each of the six core units on a 5-point Likert-type scale (1 = none, 2 = less than 25%, 3 = at least 25% but less than 50%, 4 = at least 50% but less than 75%, 5 = 75% or more), consistent with state agency fidelity measures. The six core units included skills for health and life, social and emotional learning, nutrition and physical activity, safety, alcohol, tobacco and other drug prevention, and personal health and wellness. We calculated the dose delivered as the mean of these six units, consistent with previous research on MMH [20, 52].

4.3 | Contextual Factors

4.3.1 | Supportive Leadership

Supportive leadership includes two items consistent with the implementation leadership subscale adapted for educational settings and adapted from a previous study [27, 53, 54]. We asked participants to rate, on a 5-point Likert scale from 1 = significant barrier to 5 = significant asset, the extent to which their organizational leadership (i.e., school principal or other administrators) was a barrier or facilitator to MMH implementation. We asked about administrative support and communication between the organization's staff and leadership.

4.3.2 | Intervention Compatibility

We assessed intervention compatibility using three items rated from 1 = significant barrier to 5 = significant asset, including perceptions of fit between the intervention (i.e., MMH) and organization (school), fit between MMH and organizational policies and practices, and the presence of a champion to support MMH implementation [54].

4.3.3 | EBI Focus

We included three items consistent with the Implementation Climate Scale (ICS) adapted for schools [2]. Items ask about agreement with the following statements: The school/district supports evidence-based curricula, MMH implementation is important to the school/district, and MMH is a priority for health education on a 5-point Likert scale.

4.3.4 | Resources

We included two items, community and educational system resources, for MMH implementation, adapted from Mihalic et al. [54] The items measuring resources were rated on a 5-point Likert scale (1 = significant barrier to 5 = significant asset) for their influence on MMH implementation, including community resources and material resources for MMH delivery (e.g., MMH manual and handouts).

While we did not incorporate established scales for resources and compatibility in the original project, recognizing their importance in school-based EBI implementation, we opted to utilize a purposeful selection of items from relevant scales. We used an adapted version of school-based barriers and facilitators rating scale from Mihalic et al. [54], which aligned with resources and leadership support constructs. This approach allowed us to incorporate these contextual factors within the current study.

4.4 | Procedure

Our community partners, the regional school health coordinators, emailed potential participants with information about the study and the link to determine participation eligibility. Following the screening survey, eligible participants were directed to an informed consent document. The survey was self-administered using a secure online survey administration program, and identifying information, including participant consent, was kept separately from the survey data. Participants were linked to the survey using a unique identifier. The current study (Category 1: Research conducted in standard educational settings involving everyday educational practices) was exempted from IRB approval. Participants received a research information sheet outlining the study procedures and $10 remuneration for completing the online survey.

4.5 | Data Analysis

We used SEM to test measurement and structural models examining the relationship between inner and outer setting constructs using MPlus 8.9 [55] using the maximum likelihood estimator. We first used confirmatory factor analysis (CFA) to investigate the measurement model. We made adjustments (described below) to the measurement model to achieve a satisfactory fit with the data guided by fit indices, indicator (standardized) loadings (e.g., > 0.20) [45], and substantive theory. Importantly, according to our health coordinator partners, most Michigan high schools have one health teacher. This limits the variability at the school level and makes it difficult to disentangle school-level effects from teacher-level effects. To preserve anonymity, we only asked for district-level data from health teachers.

Following the investigation of the measurement model, we examined the structural regression model, examining relationships between contextual domains and fidelity (Figure 2). We evaluated model fit using X^2, Comparative Fit Index (CFI) values (e.g., 0.90 or higher as acceptable fit), and standardized root-mean-square error of approximation (RMSEA) with the associated 90% confidence interval (e.g., 0.08 or below as acceptable fit) [45]. We compared nested models using the X^2 difference test. We used FIML (full information maximum likelihood) to address missing data. FIML estimates parameters based on available data and implied values for missing data conditioned on observed data [56].

5 | Results

We calculated means and standard deviations for all observed variables. Table 2 presents the descriptive statistics, encompassing covariances, means, and standard deviations. Data revealed less than 10% missingness across all observed variables, which were addressed using FIML for model estimation.

Fit indices for the measurement and structural models demonstrated a good fit with the data. The measurement model fit indices included $X^2 = 36.495$ ($p = 0.13$), df = 28; RMSEA = 0.04 (90% CI 0.00, 0.08), CFI = 0.99. Initially, the model indicated a marginal fit (not displayed). Modification indices suggested correlated errors between specific indicators, aligning with our theory on interdependence (i.e., embeddedness; see Figure 1). Implementing these adjustments notably enhanced model fit ($X^2_D = 15.6$, df = 1, $p < 0.005$), and subsequent models retained these correlations. The individual scale reliability for ICS is 0.85, and compatibility is 0.80. The Pearson correlations (due to two-item latent factors) for resources is 0.51, and admin support is 0.71.

In summary, the measurement model results indicate that our measures produced scores and latent variables indicative of adequate validity evidence and, therefore, are suitable for use in the subsequent structural model. The structural model fit indices were $X^2 = 57.07$ ($p = 0.03$), df = 34; RMSEA = 0.06 (90% CI 0.02, 0.08), CFI = 0.98. We first examined each latent construct and dose delivered independently, and each factor was positively associated with fidelity (results not shown). We next examined all the factors simultaneously, allowing the latent factors to covary. When examined simultaneously, only resources remained significantly positively associated with the MMH dose delivered with a standardized path estimate of 0.48. All other path estimates for latent factors to fidelity ranged from −0.3 to 0.1 (see Figure 2 and Table 3 for structural model results, including standardized and unstandardized path estimates).

6 | Discussion

Our results suggest that, individually, contextual factors were associated with the dose delivered, consistent with other research indicating that context can have a powerful influence on EBI implementation [26]. When examining the factors together, however, we found that resources were the only construct associated with dose delivered. Our findings indicate that, although all factors are potentially important factors that can impact fidelity, sufficient resources are foundational to implementation success (i.e., a key determinant). According to Nilsen and Bernhardsson, key determinants are those that "function as necessary conditions for implementation and those that may be viewed as active, driving forces required to achieve successful implementation." [30] (p14) This is consistent with recent systematic reviews of school-based interventions identifying resources as a critical determinant of implementation and sustainment [34, 37]. Despite the potential impact of resources, they remain understudied in implementation research. A recent review indicated that only 7.8% of implementation studies included cost as an outcome, the lowest of any in Proctor et al.'s original implementation outcome taxonomy [57, 58]. The limited research on implementation cost has important implications for designing financial implementation strategies. Lyon and colleagues found, for example, that all financial strategies from

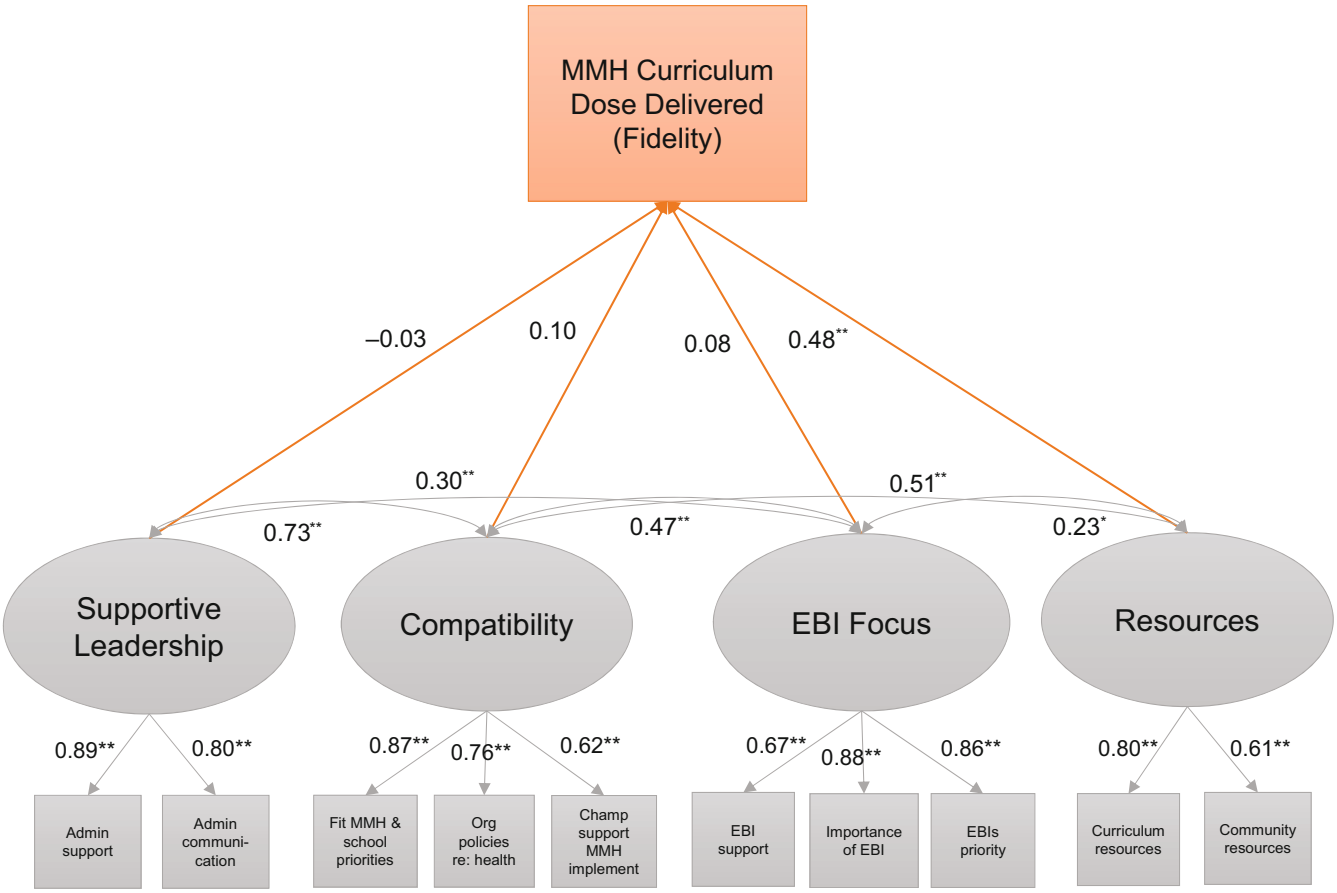


FIGURE 2 | Structural model examining the influence of inner (supportive leadership and compatibility) and outer context (EBI focus and resources) factors on MMH fidelity assessed using dose delivered. Standardized path estimates reported. $^{**}p < 0.001$.

the SISTER (School Implementation Strategies, Translating ERIC Resources) taxonomy are listed as important but not feasible [59]. This indicates that cost is a central factor limiting the public health impact of school-based EBIs, and we have a few feasible financial strategies to address this limitation. Our findings are consistent with Goldstein et al. who mention that despite the potential for the implementation of prevention EBIs to result in cost savings from a societal perspective, funding (i.e., financial strategies) is frequently not available to pay for it [60].

Resources as "necessary conditions" for successful implementation are critical in low-resource environments. Researchers have found, for example, that schools in low-resource environments operate under extreme budget constraints that may preclude securing updated curriculum materials, leading to the utilization of less valuable outdated materials and some of the additional resources needed to engage in curriculum activities with students (e.g., classroom supplies such as poster board, markers, etc.); this shortage of resources compromises the capacity of teachers to provide curriculum delivery in the manner intended, that is, with sufficient fidelity [61, 62]. Researchers have also found a robust relationship between the community in which a school is embedded and the resources/capital available; community socioeconomic status, for example, can influence the available material and human and social capital to access additional resources at the school level [63].

Collectively, this research highlights the need to understand better the resources needed for implementation and design strategies to address potential financing and resource gaps. While necessary, sufficient financial resources along do not guarantee successful implementation. Our results also indicate that each contextual determinant is independently associated with fidelity. Furthermore, the contextual factors are interrelated, suggesting interdependence and indicating that enhanced focus on financial resources and time need to be combined with other strategies, such as those that focus on other contextual determinants (e.g., supportive leadership, compatibility, EBI focus) [30]. Successful implementation depends on multiple inner and outer context determinants, but sufficient resources may create favorable conditions to achieve this objective [30].

6.1 | Implications for School Health Policy, Practice, and Equity

Our results underscore the critical role of sufficient resources in successfully implementing EBIs, focused on the MMH. However, resource availability operates within a complex interplay of factors, particularly those related to the multilevel school context. This finding is particularly relevant when situated within the framework of MMH, where resource allocation is often determined by outer setting (e.g., RESA, district) players. This raises important questions about the implications for this and similar

TABLE 2 | Covariances, means, and standard deviations for study variables.

Variables	1	2	3	4	5	6	7	8
Supportive Leadership								
1. Administrative support	1							
2. Staff and admin communication	0.708	1						
Compatibility								
3. MMH[a] Fit	0.492	0.566	1					
4. Organizational policies	0.440	0.522	0.666	1				
5. Champion—MMH implementation	0.329	0.389	0.560	0.473	1			
School Support								
6. School support	0.105	0.011	0.230	0.211	0.141	1		
MMH Importance								
7. MMH Importance	0.238	0.251	0.342	0.337	0.220	0.622	1	
8. MMH as a Priority	0.244	0.248	0.337	0.372	0.256	0.584	0.758	1
Community and Material Resources								
9. Community resources	0.227	0.237	0.335	0.278	0.482	0.038	0.070	0.090
10. Material resources for MMH	0.376	0.271	0.336	0.200	0.323	0.031	0.171	0.211
Mean ± SD	3.702 ± 0.91	3.523 ± 0.97	3.461 ± 0.95	3.519 ± 0.88	3.349 ± 0.76	4.272 ± 1.15	3.667 ± 1.10	3.652 ± 1.13

[a]MMH, michigan model for health curriculum.

interventions and related health outcomes when at least some resource decisions are made by entities external to the organization itself and how to better align resource decisions across multiple levels [64].

Michigan's educational landscape, characterized by local autonomy and varying resource levels, often leads to disparities in resource allocation. Districts with the most limited access to resources, whose students are likely in the greatest need of support, frequently face the most significant challenges in effectively implementing EBIs [47]. This reality is particularly salient in a local control educational environment, where resource decisions are often made at the district level [48]. To enhance EBI implementation and mitigate these disparities, a multilevel approach with attention to equitable resource distribution is needed. This involves addressing barriers and inequities related to resource accessibility while considering the interplay of other critical contextual factors (e.g., compatibility or fit with the population). Michigan's diverse educational context exemplifies these broader equity challenges, highlighting the need for targeted support to ensure successful and equitable EBI implementation across all communities.

6.2 | Limitations

We acknowledge several study limitations. Two factors included only two indicators, and the EBI focus factor may be interpreted at either the district or school level. Other constructs in the ICS may also be important to include. This may potentially limit the depth of analysis or interpretation. The factor related to the focus on EBIs may have been interpreted differently at the district or school level, which could introduce ambiguity. ICS, for example, could have been interpreted as a school-level (i.e., inner setting) or district-level factor (i.e., outer setting) based on question wording. Thus, we cannot fully determine if it is inner versus outer context (or both). In addition, in many cases, there are interconnections and often interdependence between the inner and outer setting factors; thus, disentangling levels may be challenging. Future research would benefit from a more explicit focus on the outer setting, as this is understudied in education research [65]. These data are cross-sectional; therefore, we cannot address the sequence and timing of determinants.

The study's cross-sectional design means it cannot establish causation or the temporal sequence of determinants, limiting

TABLE 3 | Measurement and structural model estimates.

	Unstandardized	Standardized
Measurement model	Estimate (S.E.)	Estimate (S.E.)
Supportive leadership— > admin support	1	0.80 (0.05)**
Supportive leadership— > admin communication	1.01 (0.12)**	0.89 (0.04)**
Compatibility— > fit of MMH with school and priorities	1	0.87 (0.04)**
Compatibility— > organizational policies re: health	0.81 (0.08)**	0.76 (0.04)**
Compatibility— > champion support for MMH	0.56 (0.07)**	0.62 (0.06)**
EBP focus— > EBP support	1	0.69 (0.05)**
EBP focus— > Importance of EBP	1.23 (0.13)**	0.88 (0.04)**
EBP focus— > EBP as priority	1.23 (0.13)**	0.86 (0.04)**
Resources— > community resources for MMH	1	0.61 (0.08)**
Resources— > curriculum resources	1.54 (0.32)**	0.80 (0.08)**
Structural model	Estimate (S.E.)	Estimate (S.E.)
Dose delivered— > supportive leadership	−0.04 (0.26)	−0.03 (0.15)
Dose delivered— > compatibility	0.15 (0.26)	0.10 (0.18)
Dose delivered— > EBP focus	0.13 (0.15)	0.08 (0.10)
Dose delivered— > resources	1.11 (0.32)**	0.48 (0.11)**

**$p < 0.001$.

the ability to draw causal conclusions. The measurement of the resource factor may need further refinement in future research to enhance its accuracy and comprehensiveness using a mixed methods design. This may include drawing from surveys such as the National Center for Education Statistics' Teacher Follow-up survey that includes questions ranking the availability of resources and materials/equipment for teaching health and the extent to which necessary materials are available as needed by staff; it also asks relevant resource and time questions such as the extent to which teachers are permitted time and coverage to attend health-relevant PD [66]. Qualitative methods to explore specific needed time, materials, and other resources would also support a comprehensive assessment. The study relied on a specific fidelity measure (dose delivered), and other fidelity measures, such as quality delivery and adherence, may also be important fidelity outcomes to consider in future research. We did not have sufficient power to stratify by school-level characteristics such as socioeconomic status to explore potential differences in inner and outer context determinants; this could limit the ability to examine possible differences in determinants within different school settings.

7 | Conclusions

Resources, including financial, material, or human/social resources, are central to achieving desired behavioral and implementation outcomes in schools. Implementation strategies that attend to resource needs for EBI implementation are needed. Our study underscores the importance of resources in successfully realizing desired behavioral and implementation outcomes within school settings. The availability and allocation of resources emerged as a critical determinant in implementing EBIs in schools. To improve the implementation of comprehensive prevention, future efforts must prioritize the development of targeted implementation strategies that address resource needs and that are feasible. These strategies should encompass providing necessary resources and efficient resource management to ensure optimal utilization. By addressing the resource-related challenges identified in this study, we can pave the way for more effective and sustainable EBI implementation in educational settings, ultimately enhancing the well-being and development of students.

7.1 | Human Subjects Approval Statement

This study was reviewed by the [BLINDED FOR PEER REVIEW] Institutional Review Board and was approved as exempt and [BLINDED FOR PEER REVIEW] Institutional Review Board (IRB).

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Disclosure

The manuscript does not contain any identifiable information related to the study participants. This research adheres to all applicable data protection and privacy regulations, and the confidentiality of participants' information is rigorously maintained.

Conflicts of Interest

The authors declare no conflicts of interest.

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